MAGUIRE

Gravimetric Gateway®

Materials Management System

Computer Communications for the Maguire Local Area Network

Maguire Products Inc.

Contents of this Manual

The G2 Troubleshooting section covers some common questions followed by answers to these questions. Please refer to this Q&A section before contacting G2 Customer Support.

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How To Use This Manual

If you are unfamiliar with G2, the best place to start is the Quick Start Guide. The Quick Start Guide will help new users quickly become familiar with G2 and covers installation, configuration, and the basic use of the G2 Server and Client software. Further detailed explanations of each G2 feature can be found throughout this manual in the order that they are presented in the G2 Client menu system.

Overview of the Gravimetric Gateway Software

This manual is intended to provide information for individuals who are using the Gravimetric Gateway® Server material management system. The Gravimetric Gateway® Server and Client software is currently available for Windows operating systems covering 95/98/ME/NT/2000/XP. The Gravimetric Gateway® Server program, based in concept on the earlier MLAN for Windows software, takes control to a new level of design and functionality. As in the original MLAN for Windows design, the G2 Server provides material usage tracking reports based on retrieval time settings and remote access of the basic control of settings within the Maguire Weigh Scale Blender. These include, downloading material settings and recipes as well as, work order numbers and operator numbers. Beyond the original MLAN design the G2 Server allows more complex functions such as creating, downloading and monitoring line recipes, extrusion control, and secure access from multiple G2 Client interfaces across a TCP/IP network.

This manual was written and updated based on the most current G2 Server version at the time of the release of this documentation. It is possible that the G2 version that you have may be earlier or later than the date of this manual. As of the G2 version 1.2.12 the release date of the G2 version is stored in the About Box in the G2 Server and Client menus. If your G2 version date is newer than this manual it is recommended that you check online for a newer version of the manual and download a more current version of the G2 manual if available. Likewise if your manual is newer than your version date of the G2 software it is recommended that you download a new version of the G2 software along with the latest version of the manual. Upgrades to newer versions of G2 are free of charge and may be downloaded at http://www.maguire.com/ For more information on upgrading your version of G2 to the latest release see How to Upgrade Gravimetric Gateway®.

Gravimetric Gateway® Server utilizes the Maguire Local Area Network (MLAN) protocol for communicating with Maguire Weigh Scale Blenders. In addition to Gravimetric Gateway® Server, Maguire Products offers the complete documentation of the MLAN protocol. The MLAN Protocol Manual can be used by programmers to write custom software intended to communicate with the Maguire Weigh Scale Blender. For a copy of the MLAN protocol manual, visit http://www.maguire.com/page.php/manuals.htm.

For a complete understanding of the operation of the Weigh Scale Blender (WSB), it is recommended that you have the four and/or twelve component controller manual(s) available as a reference.

All numbers in this document are assumed to be decimal (base 10) unless otherwise noted. Also, when a year is represented by its last two digits, if it is between 90 and 99 it's assumed to be between 1990 and 1999 and if it is between 00 and 89 its assumed to be between 2000 and 2089.

For your reference within this manual the Gravimetric Gateway® Server may be referred to as G2 Server. Also the Gravimetric Gateway® Clients may be referred to as G2 Clients, or as just simply the client or clients.

Hardware / Operating System Requirements

Hardware requirements for the installation of the G2 Server/Client Software

Computer	--	IBM-PC or Compatible (Pentium IV or faster CPU). We recommend that the G2 Server computer be dedicated to the purpose of collecting data for G2. Constant COM port communication between the G2 Server and the Maguire Weigh Scale Blenders may cause a noticeable lag in the processor when using the G2 Server computer for additional functions while the G2 Server is collecting data.
Operating System	--	G2 Server – Windows NT/2000/XP/Vista/Windows 7 G2 Clients – Windows 95/98/ME/NT/2000/XP/Vista/Windows 7 Windows 95/98/ME not recommended for G2 Server
HD Space	--	10GB free Hard Drive space or larger
Video	--	1024 x 768 resolution or larger recommended
Memory	--	2 GB or more
Ports	--	1 serial port for Security Key (USB security key available)

G2-SA MLAN Interface, required for most installations

This "black box" device is positioned next to the computer working as a signal amplifier and contains a security key. MLAN networks connected to two or more controllers require the G2-SA registered with a certificate for the number of controllers on the MLAN network. If you are connecting to more than 25 controllers or are running cable over 500 feet, additional signal amplifiers (part # MLAN-SA) may be required. **(See: Communication Wiring).**
USB Security Key also available for Ethernet installations.

Communication Cable – Serial or Ethernet

RS-232 - A single 4 conductor shielded cable is connected all RS-232 type WSB controllers, through a signal amplifier and to the computer. This is generally done with a single cable run through the ceiling over all of the process machines with "drops" to each controller. Be sure to read the Wiring Considerations section.
Ethernet – WSB controllers equipped with Ethernet can use an Ethernet wiring installation. WSB controllers that do not have an Ethernet port can use an Etherent to Serial converter.

TCP/IP Network for remote G2 Clients (installed on computers other than the G2 Server)

Provided, as part of the G2 Server, is the capability to connect to the Server through an installed network card's TCP/IP port. This will allow Gravimetric Gateway® Clients to connect to the G2 Server and access all functions remotely across a network.

Gravimetric Gateway® Clients

The Gravimetric Gateway® Clients are IBM compatible PC's with the Windows operating system, which have the G2 Client software installed. These PC's remotely connect to the Gravimetric Gateway® Server remotely via a network using the TCP/IP protocol or locally (localhost) on the same system as the G2 Client. Connecting to the G2 Server gives the client access to the Maguire Weigh Scale Blenders and the information databases on the G2 Server.

Printer

A printer installed on the Windows system is required when you wish to obtain printed reports.

Installing the Gravimetric Gateway Software

Pre-Installation

Prepare for MLAN Communications – Installation of an MLAN communications network is required for communications between the G2 Software and the Maguire Blenders. See MLAN Communication Wiring for more information.

Assign Unique WSB Identification Numbers to Each Blender - Each WSB controller **must** have its own **unique** identification number. This number must be entered at the controller using the keypad. These numbers can range from 001 to 254. Do not use 000 or 255. If the same number is assigned to two or more controllers, these controllers will not communicate successfully with the computer. They will both answer to the same request resulting in failed communications.

This ID number is used for all communications, and for identifying the source of all report information. It may be helpful to you if you choose a numbering sequence that relates in some way to each controller's location.

To enter an **identification** number into a controller, do the following (at the controller):
Turn the "STOP END OF CYCLE" switch OFF (down),
Turn power ON

Press:	*	Display will say:	(PASSWORD)
Press:	22222	Display will say:	(P x.x)
Press:	*66	Display will say:	(ID 000)

Enter: New correct ID
Enter all 3 digits.
Use leading zeros.
Correct entries are 001 to 254.
Do not allow 2 controllers to have the same number.

Repeat this sequence for ALL controllers.

Write down the numbers. This list will be needed when manually entering WSB I.D. numbers into G2 using the G2 Client's Blender Edit Screen.

G2 Installation

General information

The Gravimetric Gateway® Server/Client Software can be installed on an IBM compatible PC equivalent to a Pentium 233 or faster. The G2™ Server is currently available for Windows operating systems including 95,98,ME, NT, 2000 and XP. **Operating system recommendations for the G2 Server are Windows NT, 2000 or XP**. Client only installations that will connect to a remote G2 Server can use Windows 95, 98, ME. A fresh install of the Windows operating system is recommended before installing the G2 software to help reduce the potential for Windows related problems. We recommend that the G2 Server computer operate as a dedicated machine for the purpose of Weigh Scale Blender data collection. Constant COM port communication between the G2 Server and the Maguire Weigh Scale Blenders may cause a noticeable lag in the processor when using the G2 Server computer for additional tasks while the

G2 Server is collecting data. This is particularly true for slower computers with less RAM. Faster PC's with RAM above 128 MB may not notice any delay at all if the computer is used for additional tasks.

Start Menu Program Group: By default this is **Gravimetric Gateway** unless changed during installation. Shortcuts are Client, G2 Server, Satellite ComServer and Simulated Blender.

Program location: By default the location is **C:\g2** unless changed during installation.

Data Location: By default the location for all G2 databases is **C:\g2\g2data** unless changed during installation.

G2 Server: The G2 Server is the program that communicates with the weigh scale blenders and constantly collects data from the WSBs on the MLAN network. The G2 Server must be started before the G2 Client can connect to the Server program. The G2 Server must be running at all time to collect data from the blenders.

G2 Client: The G2 Client program connects to the G2 Server to access the databases and control the Weigh Scale Blenders. The G2 Client can connect to a Server running on the same PC or on another PC located on your computer the network.

Simulated Blenders (for G2 Demo Operation): Previous versions of G2 (versions 1.x and 2.x) simulated communications with blenders with little control over the simulated blenders. G2 3.1 allows for simulated blender to act as a standalone program that can be fully configured. This new simulated blender interface can be helpful in testing and learning situations under Demo Mode.

Download the full Installation of G2

The full installation of the G2 Software can be downloaded free of charge from the Maguire web site at www.Maguire.com/g2 . The full installation is downloaded as a self-extracting Zip file that will create a folder called c:\g2temp when executed. After extracting, the G2 installation will start automatically; otherwise it may be installed by running c:\g2temp\setup.exe.

CD-ROM Install

When the G2 CD-ROM is inserted into the CD-ROM drive the installation of the G2 Server should automatically start. If it does not auto start, browse the CD-ROM and double-click G2Setup.bat to install the Server/Client software.

Installation Process:

The G2 Installation is designed as an Install Shield™ guided installation. The user will be prompted with several choices during installation. The following is an outline of the G2 installation:

1. **Language -** The user is prompted for the Setup language. Choices are English, Danish, Dutch, Finnish, French, German, Italian, Portuguese, Spanish and Swedish.

2. **Program Location -** The G2 installation will prompt for the destination location for the installation. By default this location is c:\g2. All G2 related program files would be

stored in this location.

3. **Software Components – The choices are:**
    a. **Server –** This component of G2 is what actually communicates with the Maguire Weigh Scale Blenders. Only one Server is required to operate G2. The Server should only be installed on the computer that is connected to the Maguire Weigh Scale Blenders.
    b. **Client –** The G2 Client connects to the G2 Server and enables the user to access and control the Maguire Weigh scale Blenders as well as view collected data. Multiple G2 Clients can connect to a single G2 Server.
    c. **Satellite ComServer –** This feature is designed to allow a computer to share it's COM port with a G2 Server, enabling a Maguire Weigh Scale Blender to be connected to the COM port and accessed and controlled by the G2 Server.
    d. **Demo –** Demo starts a Simulated Blender. Simulated Blenders are necessary for running in Demo Mode. See G2 Demo Server Operation – Running in DEMO MODE for more information.

4. **Database Location -** The G2 installation will prompt for the destination location for the G2 Databases. By default this location is c:\g2\g2data. All G2 databases would be stored in this location.

5. **Program Folder –** The program folder is where the installation will put G2 in your start menu. By default this location is **Gravimetric Gateway** located under Programs.

6. Setup will proceed with the installation. You will be prompted to read the G2 RELEASE NOTES, after which, the installation is finished.

IMPORTANT G2 VERSION UPGRADE NOTES

To find out the version of G2 see the About Box in the help menu of the G2 Client.

The Gravimetric Gateway® Server / Client Software may be updated to the latest version easily and free of charge. G2 Updates may be obtained online at http://www.maguire.com/software/download.htm or requested on disk.

In most cases a full install is required to upgrade to a newer version of G2. However some upgrades may be obtained and installed using a single file upgrade method. These types of upgrades may be used in certain version changes. All G2 versions are labeled as a 3-digit version number. Single file upgrades may be used if your version number is the same as the available version upgrade EXCEPT for the last digit. This rule applies unless otherwise specified in the G2 section of the Maguire.com web site.

Single File Upgrades

IF available single File upgrades to the G2 Software can be downloaded free of charge from the Maguire web site at www.Maguire.com/g2. Upgrades are downloaded as a self-extracting Zip file that will extract the necessary file(s) for upgrading G2 when executed. By default the files will be extracted into c:\g2. If the G2 software was installed in a different location on your system, you will need to specify that location instead.

Upgrading G2 through a FULL Install

If you are upgrading with a full install of G2 and want to use your existing databases, backup all databases located in c:\g2\g2data (c:\g2data for 1.x installations) prior to installing the newer version of G2 as a safety precaution. An installation of G2 over an existing installation will not overwrite your databases but a backup of your databases is always recommended. For full installation upgrades, read **Installing the Gravimetric Gateway Software**. For Support on upgrading, contact Maguire Products Inc.

Using MySQL as the G2 Databases

MySQL Overview

The MySQL® Database Server is an open source database known and used worldwide because of its ease of installation, maintenance, configuration and speed. MySQL is available without a license fee under the GNU General Public License (GPL). Downloads, manuals and support for MySQL are available at www.mysql.com.

G2 and MySQL®

Introduced in the Gravimetric Gateway Software version 3.2, is the ability for some or all of the G2 databases to be located in a MySQL Database Server. It is not necessary to use MySQL for successful operation of the G2 Server software because by default G2 has its own databases to store data. However by using MySQL to manage the G2 databases, you may be able to access the G2 databases through tools provided by the MySQL Database Server, or through other client software products provided by MySQL such as MySQL® Control Center, MySQL® Connector/ODBC, MySQL® Connector/J or MySQL® Connector/C++, all of which are available through www.mysql.com.

MySQL Support

Maguire Products Inc. does not provide support for the MySQL® Database Server or the MySQL client software packages. These products, which are designed and distributed by MySQL, are also supported by the developers of MySQL. Please refer to the following web page regarding MySQL support. http://www.mysql.com/support-and-consulting.html

Basic support for setup of the **MySQL® Database Server** and integration into the G2 software is provided by GBS and Maguire Products Inc. in the form of this manual and limited assistance through our Technical support staff however problems, questions or general support relating to the MySQL Database Server itself or the client programs provided by MySQL are not supported by Maguire Products Inc. or Green Bridge Station.

MySQL Installation

In conforming to the GNU General Public License (GPL), MySQL is not distributed with the G2 Server nor does Maguire Products Inc. distribute MySQL. The MySQL installation can be downloaded or purchased from the MySQL web site. Please visit the following URL for downloads and more information.

http://www.mysql.com/downloads/index.html

This installation tutorial is based on the MySQL-4.0 download for Windows 95/98/NT/2000/XP/2003 (file name mysql-4.0.15-win.zip). This installation download also require Pkzip to un-compress the installation files. Pkzip can be downloaded at the following URL: http://www.pkware.com

Preparing for the MySQL Installation

G2 Version Upgrades

To use MySQL as your G2 database, G2 must be version 3.2 or later. Any version of G2 prior to 3.2 does not support MySQL. G2 upgrades are available at www.Maguire.com.

We recommend a full installation of G2 over the existing G2 installation. Although the G2 Databases will not be altered during an installation or upgrade, we high recommend backing up the databases prior to any upgrade. All databases are located in c:\g2\g2data of the G2 Server computer by default.

After a G2 Upgrade from a prior version, your pre-existing G2 databases must be exported to CSV files to move them into MySQL.

When applying an upgrade or a full installation to the G2 Server, all G2 Client machines, if they are located elsewhere on the network, must also be upgraded to the same version as the G2 Server.

G2 Data Export

If you have been running the G2 Server software prior to this installation of this MySQL upgrade and you wish to preserve your existing data, you must export the databases prior to changing the G2 installation to a MySQL database.

Overview of exporting your G2 databases:

Step 1. In the G2 Client, in the menu go to, Main, Export Data.

Step 2. Select a database you want to later import into MySQL.

Step 3. Select the type of File Format to be used in the Export. CSV is the default type.

Step 4. Browse to the location on your computer where the export will be saved and type a filename including the **csv** extension. Example: **blenders.csv**

Step 5. Click **Begin Export**. Status message should read ***Export completed successfully.***

Step 6. Follow the above steps for each database you wish to export for use in MySQL. Give each database export a unique name and do not append to the end of file. These database exports will later be imported into the MySQL database.

G2 Database Script for MySQL

To simplify the creation of the G2 database within MySQL, a script file will be used to build the g2 database. This file, called **script.dat**, can be downloaded or created. Below in the gray textbox is the content of the **script.dat** file. To create this file, copy the contents of the textbox below and paste it into a simple text editor such as Notepad (do not use Word or Wordpad). Save the file as **script.dat** and

place it in a temporary folder on the computer that will run the MySQL database. For these instructions we will use the folder: **c:\temp**

```
create database g2;
grant all privileges on g2.* to g2@'' identified by "password";
grant all privileges on g2.* to g2@'%' identified by "password";
grant all privileges on g2.* to g2@'localhost' identified by "password";
```

A second file will be used to apply the script.dat file to MySQL. This file is a batch file that will be called mysqlconf.bat. Below in the gray textbox is the content of the **mysqlconf.bat** file. To create this file, copy the contents of the textbox below and paste it into a simple text editor such as Notepad (do not use Word or Wordpad). Save the file as **mysqlconf.bat** and place it in a temporary folder on the computer that will run the MySQL database. For these instructions we will use the folder: **c:\temp**

```
C:\mysql\bin\mysql -u root -p mysql < script.dat
```

To download these files, visit **http://www.maguire.com/install/g2/mysql**

These files will be used later during the setup of the g2 database within MySQL.

MySQL Download / Installation

As stated in this section, MySQL is not distributed by Maguire Products and must be downloaded from www.MySQL.com.

Download / Installation Instructions

1. Visit the following URL and download the latest Production release. At the time of this document, the latest was MySQL 4.0.
   http://www.mysql.com/downloads/index.html

2. Download from the Windows downloads:
   95/98/NT/2000/XP/2003 - file size: 22.7M

3. Save the downloaded file in a temporary folder on the computer that will run the MySQL database. For these instructions we will use the folder: **c:\temp**

4. Unzip the downloaded MySQL file (example: *mysql-4.0.16-win.zip*) to **c:\temp** (To unzip this file, Pkzip is required. Pkzip is available at www.pkware.com)

5. Run Setup.exe from the c:\temp folder.

6. Follow the MySQL install instructions. When prompted for a destination folder in which to install MySQL, you may use the default folder **c:\mysql**. The following instructions will assume you installed MySQL to **c:\mysql**.

7. Start the MySQL service by opening your Control Panel. Select **Administrative Tools**. Select **Services**. Verify that MySql is listed in the list of services. Right-click on the MySql service. Click **Start** from the popup menu to start the MySQL service. The status of the MySql service should be listed as **Started** and Startup Type as **Automatic**. Close the Services console window.

8. To configuring MySql to work with G2, execute the batch file mysqlconf.bat by double-clicking mysqlconf.bat or opening a command prompt and typing:

   ```
   c:\temp\mysqlconf.bat
   ```

   Executing mysqlconf.bat will apply the script.dat to MySQL and create the g2 database.

Configuring G2 to use MySQL (requires G2 version 3.2 or later)

1. Stop the G2 server. Select "DB Configuration" from the "Configuration" menu. Check the databases you want to store remotely on the MySQL server.

2. Enter the I.P. address into the Server IP field followed by **/g2**

   Example: 192.168.1.100/g2 if your MySQL Server's IP address is **192.168.1.100**

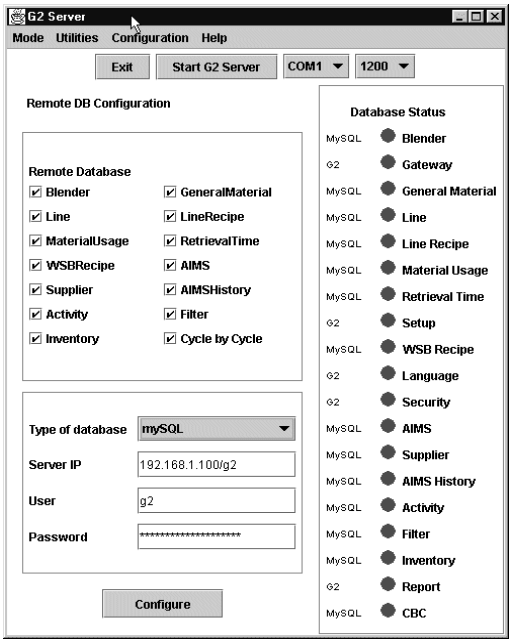
3. Type g2 for the "User" field.

4. Type "password" for the "Password" field.

5. Save the MySQL Configuration by clicking the **Configure** button.

6. Start G2.

7. Start a G2 client and import your database you exported earlier. If you do not have databases to import, please refer to the Quick Start guide for the process of beginning to use the G2 Software.



Quick Start Guide To Using the G2 Server & Client

An Overview of the Quick Start Procedure

- **Review Important information before running G2**
- **Starting the G2 Server for the first time**
- **Starting the G2 Client**
- **Adding Blenders**
- **Creating Materials**
- **Creating Recipes**
- **Adding Retrieval Times**
- **Downloading Recipes to your Weigh Scale Blenders**

What you should know before running G2

G2 has two main components to the program. The G2 Server and the G2 Client. The G2 Server is the component of G2 that communicates with the Blenders. **The G2 Server must be running for G2 to collect data from the Blenders**. Users connect to the G2 Server using the Client. Multiple G2 Clients may connect at any one time to the G2 Server. Running the G2 Server does not require a G2 Client to be running.

Once you begin using the G2 Server to collect data from your blenders, **DO NOT CLEAR TOTALS** in the WSBs. G2 uses the totals of the 12 components (4 components with 4 software WSBs). Although G2 attempts to detect all user-cleared component totals, if cleared, the totals may not be accurate in G2 if the server does not detect a clear had occurred.

It is good practice to allow G2 to manage the WSBs and for operators to use the G2 Client to make changes in recipes and settings of the Blenders.

Starting the G2 Server for the first time

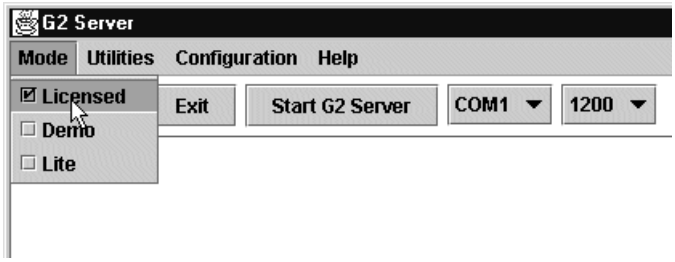
The Gravimetric Gateway® requires the TCP/IP network protocol to be installed for communication between the G2 Server and the G2 Client. In most cases TCP/IP is installed with Dialup Networking so your system probably will have the TCP/IP protocol installed. For more information on installing the TCP/IP protocol see section *Network Installation and Configuration*.

The G2 Server must be started first before the G2 Client. From the Gravimetric Gateway program group in the start menu, click the G2 Server shortcut icon. Your MLAN network of blenders will be connected to a serial port of your computer.

Select the correct **COM port** from the drop down menu.

The first time the G2 Server is started, you will select the type of startup from the Menu. Choices are:

License – Requires a G2-SA (black box) licensed for a specific number of blenders
Demo – Simulated mode, Accesses only Simulated Blenders (G2 Server Demo)
Lite – Single blender operation, non-licensed, G2-SA not required unless serial cable distance to blender is over 50 feet.



Select the type of start-up for the G2 Server. If you have been issued a G2-SA, start in **licensed** mode.

Click Start G2 Server.

As the G2 Server Starts, the following messages will be displayed.

G2 Version x.x.x (represents G2's version number)
(DataServer) using "C:\g2\g2data" for database directory.
Serial#: *xxxxxx* (represents your G2-SA's serial number, if serial is "0" no communicates established, possibly wrong COM port)
Ext Ctrl: (*ON/OFF*)
AIMS: (*ON/OFF*)
DNS Ctrl: (*ON/OFF*)
Next preset log time is at …(date and Time)…

When this message is displayed then the Gravimetric Gateway® Client may be started. All operations and user interfaces are done from the Gravimetric Gateway® Client.

NOTE: When starting in licensed mode, if the G2 Server does not detect the G2-SA, a message box will be displayed stating that it was not detected. If G2 does not detect a G2-SA, will not start in licensed mode.

G2 Server Utilities – See G2 Server Operation on page 22.

Running the Gravimetric Gateway® Client for the first time

The version of the Gravimetric Gateway® Server that is distributed on the Maguire CD-ROM is the complete version. To utilize all of the features of the G2 Server requires a security key (**G2-SA**), which may be obtained from Maguire Products Inc. Without the security key the G2 Server is limited to control of a single weigh scale blender and does not have Extrusion Control enabled. G2 Server in Demo mode, without the security key, can simulate all of the features in demo mode, including connecting across a network and Extrusion Control, allowing the user to become familiar with the G2 Server and the Client Software operation. In G2 version 3.1 and later, Demo Mode requires the use of the Simulated Blender. For more on the Simulated Blender See **G2 Server Demo Operation**.

During the G2 installation the G2 Client is also optionally installed. While the server continuously runs in the background collecting data, it is the G2 Client that the operator will use to create materials, recipes, setup retrieval times, run reports and generally manage G2 and the MLAN network of blenders. The G2 Server does not depend of the Client to collect data. Exiting the G2 Client does not exit the server. The Server continues to run as long as the G2 Server interface is running. If the operator chooses to exit any G2 Client, whether local or remote, after changing settings, downloading recipes or

running reports they may do so without affecting the monitoring of the MLAN network by the Server. Also it should be noted that if more than one G2 Client were connected to the same G2 Server, any changes that are made from any one particular G2 Client would be updated immediately on all other G2 Clients that are currently connected to that server.

Start a Gravimetric Gateway® Client

To start a G2 Client, click Start/Programs/Gravimetric Gateway (default location) and then the Client icon to run the Client software.

Connecting to a Gateway

The Gravimetric Gateway® Client must connect to the server before accessing the G2 Server's databases. By default the G2 Client attempts to connect to the same computer it is running on (localhost). If the localhost computer is not running the G2 Server, you may be prompted that it could not connect to the localhost computer. If the G2 Server is not running, start the Server first and retry.

If the Server is located elsewhere on your network, click Abort then in the Client menu, click Main/Gateways. This will bring up the Gateway screen. Enter the IP address or the computer name (Host Name) of the G2 Server on your network and click add/update. Select the G2 Servers address in the list and click connect. For more information on setting up a TCP/IP network, please read **Setting Up Your Gravimetric Gateway® Client Network.**

Adding Your Blenders

Before G2 can access the Weigh Scale Blenders on the MLAN network, you must first add your WSB I.D. numbers to the G2 database. This is done by using the Blender Edit Screen, which is located in the G2 Client under the Edit menu. The Edit Blender screen is used for maintaining a database of WSB ID numbers and direct access to WSB Parameters. All possible WSB ID numbers, 1 though 254 may be manually entered. Be sure that the blenders you are adding are turned on and connected to the MLAN network. Enter the WSB number that is assigned to your blender, add a description and click Add/Update. Clicking Add/Update will force the G2 Server to probe the WSB and if successfully probed, it will display all current parameter names and values. Do this for each blender on that MLAN network.

Adding your Materials

Before you can build and download recipes you must first enter your materials into the material database since all recipes consist of one or more materials. To enter materials into the material database, click from the main menu Edit / Materials (Crtl+M). This brings up the materials edit screen. Within the database a material consists of a "Code" (or name), which may be up to 20 alphanumeric characters, a "Description" which may be up to 80 alphanumeric characters, a "Supplier" which may be up to 40 alphanumeric characters, the default "Type" for this material (regrind, natural or additive), "Material Cost" and "Available". Only the "Code" is required for a material to be entered into the database. All other fields are optional. Also if the material's default "Type" is specified it does not lock the user into classifying the material as only that type when building a recipe, it just defaults to that predefined type in the recipe edit screen at which time it may be changed. "Available" (quantity on hand) and "Material Cost" are for inventory tracking.

To add a new material simple enter a unique "Code" (required), a "Description" (optional), the default "Type" (optional although if nothing is selected then the default is regrind). When all entries have been

made, click the "Add/Update" button. Clicking *Hide List* will display additional fields that are used with the Advanced Inventory Management System or AIMS for short. For more information on AIMS see *Advanced Inventory Management (AIMS)* on page 75. To clear all data from the entry fields and deselect the list click the "Clear Entry Fields" button. Materials may be changed after they are added to the material database. You may make changes to a material by clicking on the material in the material list. This will put the material's information into the entry fields. You may edit any field except the code field. Editing the code field will create a new material. When you have made your changes click the "Add/Update" button. To delete a material click on the material in the material list to bring it up to the editing fields. Click the "Delete" button to permanently remove the material from the material database. Note: If a material is being used in an existing recipe the user will not be able to delete the material. To see what recipes a material is being used in click the "View Recipes" button. To toggle back to the material list, click the *View Materials* button.

Building Recipes

After your materials have been added to the materials database, you are now ready to create WSB recipes. To enter recipes into the recipe database, click from the main menu Edit / WSB Recipes (Ctrl+R). This brings up the recipe edit screen. Within the recipe database a recipe consists of the unique "Recipe Name" which may be up to 20 alphanumeric characters, a "Recipe Number" which may range from 0 to 999999999, a "Description" which may be up to 80 alphanumeric characters, a "Batch Weight" which may range from 0 to 999999999, the "Recipe Type" which is either type 4 software or type 12 software and up to 12 materials with type and settings. "Recipe Name" and "Recipe Type" are the only required entries for a recipe to be added to the recipe database. All other fields are optional however a recipe with no materials cannot be downloaded to a WSB.

To build a recipe, first enter a recipe name unique from any other recipe name. Next you may enter the recipe description (optional), recipe number (optional), the batch weight (optional) and choose the recipe type. Next you will add the materials each with a material type and setting. With the mouse, click in the material field that pertains to the hopper number of the WSB (field 1 = hopper 1, field 2 = hopper 2, etc…). When you click on the material field the recipe list will be replaced by the material list. Using the mouse click on the material you wish to be added to the recipe. When a material has been selected it will be added to the field and the material list will be replaced by a list of material types to choose from. Select the type for that material. Once selected you will now have a keypad to enter the setting for that material. Enter the proper setting and click OK. The material fields will cycle one to the next in that order. You may choose at any time a material field, type field or setting field to edit. The type field and settings field are only editable if a material has been selected for that row in the recipe. To remove a material from a row click on the material you wish to delete and press the delete key on your keyboard. To change a recipe, click on the existing recipe in the recipe list. The recipe will be displayed in the edit fields. You may change any field in the recipe excluding the name of the recipe. If you change the name of the recipe you are creating a new recipe.

Creating Lines (if applicable)

It may be desirable to create and use lines. A line can be defined as group of blenders that would receive downloaded recipes at the same time. The group of recipes that would be downloaded to this "Line" is called a "Line Recipe". Before a line recipe can be built a line must first be created.

To create a line, click from the main menu Edit / Lines (Ctrl+E). This brings up the line edit screen. The line database stores the line's name, description and up to 12 WSB ID numbers. Only the line's name is required to store the line in the database. To build a line, first enter a unique name for the line. Then, if you wish enter a description for this line. Next you will click in a field under "Blenders". The position you click in will remain highlighted in yellow. Next you will see a list of active blenders on the right. Clicking on a blender will add that blender to the position you chose in your line. You cannot

have two blenders in the same line with the same ID number. The positions in the line (1 through 12) have no effect on how the line is processed. You may organize the blenders in your line however you wish. When you have finished adding blenders to your line click the Add/Update button.

To remove a blender ID from a position in the line, highlight the blender ID and press the delete key on your keyboard. To permanently remove a line from the line database, select the line you wish to delete from the line list and click on the delete button with the cursor.

To toggle between the line list and the list of active blenders simply move the cursor over the name and description fields to bring up the list of lines or to bring up the list of active blenders move the cursor over the blender fields 1 through 12.

Setting up Retrieval Times

If you are running your G2 Server for the first time you will probably want to set up retrieval times. Retrieval times are specific times when the server will record the accumulated totals of each WSB that is currently online when the retrieval time passes. Times should be entered in standard AM/PM format. Military times are NOT used. To set up retrieval times click Edit / Retrieval Times (Ctrl+T). This brings up the retrieval times edit screen. To enter in a new retrieval time, click in the "Time" field. To enter the time, click in the time field using the mouse or use the tab key to move the cursor to the time field. Use the up and down arrow keys to increment or decrement the hours and minute. Use the right and left arrow keys to move from hours to minutes to AM/PM. AM/PM is toggled using the up/down arrow keys or spacebar. For NOON, enter 12:00 PM.

Since reports are run from one selected date to another, it is necessary to retrieve data at least once a day to keep totals properly assigned to the correct date. Therefore, there must always be at least one retrieval time in the retrieval times database if you wish to generate reports based on material usage broken down by date. Also working as a retrieval time is the "end of day" time located in the Setup screen.

End Of Day Time Explained

In Setup you may set the time that will determine the "end of day" time for report generating. The "end of day" time works like a retrieval time however what sets it apart from a retrieval time is that the "end of day" time will determine the ending time of a generated report. It is important to understand that the "end of day" time is not necessarily the end of the 24-hour day but rather the end of the last shift of the day, which in some cases will extend into the next physical day on the calendar. An example of how the "end of day" time will work would be as follows. If the last shift of a day (3rd shift) starts at 11pm and ends at 7am the next morning, then the "end of day" time is set to 7am. A report that is generated for a single day would include the entire last shift that extended from 11pm into the next morning ending at 7am the following day. Material processed during most of the 3rd shift was actually processed during the next day on the calendar but is included in the report because the "end of day" time. If day to day reporting is to be generated based on the calendar days and not to include a shift, which overlaps dates, leave the "end of day" time set to 12:00 AM.

Building Line Recipes (if applicable)

A line recipe is a group of recipes that, when downloaded, go to a predefined group of blenders. As previously mentioned you must first create a line to work with before building a line recipe.

To create a line recipe, click from the main menu Edit / Lines Recipes (Ctrl+N). This brings up the line recipes edit screen. Only the line recipe's name is required to store the line in the database. To build a line recipe first enter a unique name for the line. Then, if you wish enter a description for this line. Next you will choose a line to use with this line recipe by moving your cursor over the "Blender" fields

1 through 12 on the left which will pop up the list of lines in the center of the screen. Next you will move your cursor over the recipe column on the right, which will pop up the recipes in the recipe database. By clicking on the position directly across from the blender you wish to assign a recipe to, the position will remain highlighted in yellow. Next you will select from the list of recipes in the center the recipe you wish to assign to that blender. When you have finished adding recipes to your line recipe click the Add/Update button.

To remove a recipe from a position in the line, highlight the recipe and press the delete key on your keyboard. To permanently remove a line recipe from the line recipe database, select the line recipe you wish to delete from the line recipe list and click on the delete button with the cursor.

Toggling the list in the center between "Line Recipes", "Lines" and "Blender Recipes" is done by moving the cursor over the name and description fields at the top for "Line Recipes", moving the cursor over the blender fields 1 through 12 for "Lines", and moving the cursor over recipe for "Blender Recipes".

Download Recipes

The recipe download screen is for downloading recipes to Weigh Scale Blenders on the MLAN network one recipe at a time. In order for the Gravimetric Gateway to accurately track material usage, recipes must be downloaded into the WSB from the G2 Client's download screen.

To download a recipe to a WSB, click from the main menu Download / Recipe to WSB (Ctrl+D). This brings up the recipe download screen. To choose the WSB you wish to download a recipe to, select a blender from the WSB # drop-down list located in the upper left corner of the download screen. Selecting a blender will retrieve the selected blenders current recipe's name, description, operator number, work order number, and materials with their type and current setting.

> **Notes on Downloading Recipes:** If this is the first time a blender is probed by the server it may return the message "Recipe NOT found in database" and all materials are Unknown. This is because the blender's current recipe is not stored in the recipe database until a recipe has been downloaded from the server to that blender. The blender's current settings will be retrieved from the blender and put in the proper hopper field under the current recipe in the download screen. If the recipe the blender is running has been enter into the database including setting (see Building Recipes) then by downloading that recipe to the blender in question the current recipe will be stored in the server's database. If it is not known if the settings of that blender match the recipe's settings in the recipe database then you can check off "No Settings" which will cause the server to NOT download the settings of the recipe to the blender.

To download a recipe to a blender select the active blender from the WSB # dropdown list. To bring up the list of recipes to choose a recipe from click the "Show Recipes" button. This will bring up a list of recipes. Choose the recipe you wish to download by clicking on the recipe. To hide the recipe list, click the "Hide Recipes" button. At this time you may add the operator number and the work order number by clicking in their perspective fields, which will bring up a keypad to enter your number. When finished click ok. Also settings of the recipe may be adjusted at this time by clicking on the settings you wish to change under "New Recipe" on the right side of the download screen. When the recipe is ready to be downloaded click the "Send to WSB" button. Within a few seconds all fields will clear and the recipe has been downloaded. To verify that the recipe has been downloaded choose that blender from the WSB # dropdown list. Recipe may be adjusted simply be choosing the WSB # from the dropdown list, clicking the "Copy" button, adjusting the operator number, work order number, or any of the settings. When all changes have been made, click the "Send to WSB" button.

Download Lines (if applicable)

The line download screen is for downloading multiple recipes to a predefined group of Weigh Scale Blenders on the MLAN network in a single download.

To download a line recipe to a line of blenders, click from the main menu Download, Line Recipe to a Lines (Ctrl+L). This brings up the line recipe download screen. When viewing the download screen you will see a list of line recipes that exist in the line recipe database. When you choose a line recipe from the line recipe list the information regarding that line will be brought to the screen. Below the list you will see a maximum of 12 WSB ID's that belong to that line in the first column. In the second column will be the WSB's current recipe. In the third column is the recipe from the line you chose that will be downloaded to that particular WSB. The fourth column allows you to prevent settings from being downloaded to that particular WSB by checking the "No Settings" box. The fifth column is the status of the WSB. Status may be one of the following:

Generating Material Usage Reports

Material usage reports can be generated from data collected from the Maguire Weigh Scale Blenders by the G2 Software. To generate a report based on material usage over time click from the main menu Reports / Material Usage (Ctrl+U). This brings up the report generation screen. You begin by selecting a start date. To select a start date click on "Start Date" or the date to the right of "Start Date". This will give a calendar from which you can select a date. To change the month of the start date, click on the opposing arrows to the left and right of the month. To change the year click, on the opposing arrows to the left and right of the year. When you have the month and year on the calendar select the day by clicking on the day. Doing so sets the start date. The same action is taken when selecting a stop date. Click on "Stop Date" or the date to the right of "Stop Date", choose the month and year using the arrows and then click on the day. This set the stop date. You may change the start or stop date by clicking on the date and reselecting what you have entered. You may also clear the start and stop date by clicking clear entries.

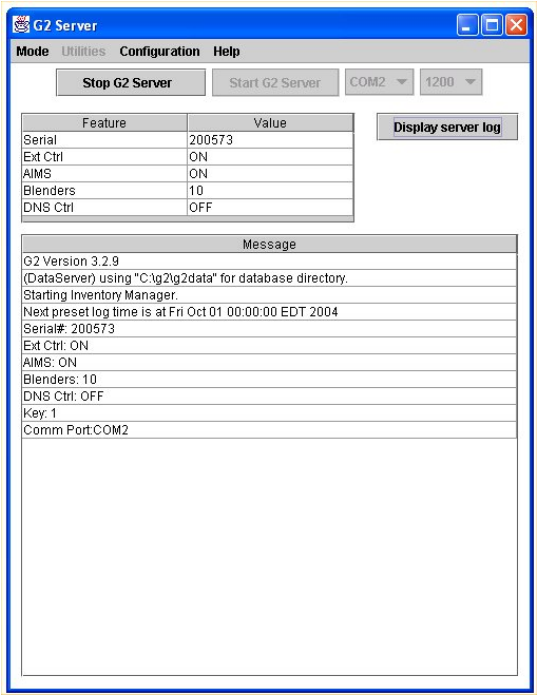
When you have made your selection click begin report. This will bring up a report window with the requested report. You may recalculate the report based on pounds, kilograms, ounces or grams from the report window. If you wish to print the report clicking print will do so.

Monitoring Activity

There are several methods of monitoring blender activity available in the G2 Client. These monitoring tools are View Blender, View Line and View Plant all available from the View selection in the Client menu. Other tools, available by double-clicking the large icons in the Client, are the Blender Alarm Status window, AIMS Alarm window, Throughput Alarm window, Activity Logger, and the Event Monitor.

G2 Server

Overview



G2 Server: The G2 Server is the program that communicates with the weigh scale blenders and constantly collects data from the WSBs on the MLAN network. The G2 Server must be started before the G2 Client can connect to the Server program. The G2 Server must be running at all times to collect data from the blenders.

G2-SA – The Security Key

To utilize all of the features of the G2 Server requires a security key, which may be obtained from Maguire Products Inc. Without the G2-SA, the G2 Server is limited to a 50 foot distance from the G2 Server PC to the Blender Controller and is limited to control of a single weigh scale blender due to a lack of the G2-SA's security key. This is known as **Lite Mode** and does not have Extrusion Control enabled.

Demo Mode

The G2 Server can run in Demo Mode without the G2-SA and interact with the Simulated Blenders. In Demo Mode all of the features of G2, including connecting across a network and Extrusion Control are enabled, allowing the user to become familiar with the G2 Server and the Client Software operation.

For the Gravimetric Gateway® Server to properly communicate with the blenders, the MLAN network including the G2-SA must be connected to an un-used COM port on the G2 Server computer.

G2 Server Menu Options

- **Mode – Selecting the type operation the G2 Server will start under.**
  - **Licensed –** Start in this mode for normal multi-blender operation. Requires a G2-SA licensed for 1 or more blenders.
  - **Demo –** Start in this mode for simulated operation. Requires the startup of one or more Simulated Blenders. See Demo Server Operation on page 124.
  - **Lite -** Start in this mode for single-blender operation where the blender is within 50 feet of the G2 Server (Serial cable length limit). Further lengths if you are using a MLAN-SA.

- **Utilities – Useful Tools for troubleshooting communications and repairing databases.**
  - **Rebuild/Verify database –** If a database is detected as corrupted, this utility may possibly be able to repair your database(s).
  - **Ping Test –** For testing the MLAN communication lines to individual blenders

- **Configuration – Database configuration menu.**

- **DB Configuration –** MySQL Database configuration screen
  (See MySQL Server section of this manual for more information.)

- **<u>Help</u> – Version information about the G2 Software**

Starting G2 Server Operation

To start the Gravimetric Gateway® Server click the G2 Server icon in the Gravimetric Gateway® program group. This will start a G2 Server Interface. Under the G2 Server menu, choose the mode you want to start in, **Licensed, Demo** or **Lite**. The G2 Server interface has buttons to start and stop the G2 Server and a drop down menu to select the COM port that the MLAN network is plugged into. The G2 Server interface contains two windows for displaying information. The upper window displays the G2-SA's serial number, the number of blender licenses, and the status of G2 features (Extrusion control, AIMS, and DNS Control). The lower window displays current information regarding communications, tag changes, startup and shutdown, and errors in communications as well as program errors. This information is also archived in the Serverlog. The Serverlog can be displayed by clicking the Display server log button. The Serverlog is one of three files located in the c:\g2\g2data folder that contain logged server and G2 program information. These files, Serverlog, Errorlog and Debuglog, can be helpful when troubleshooting and can be opened in any text editor such as Notepad.

Typically during startup windows will display the G2 version number, the directory that the Data Server is using, Starting Services such as Inventory Management and AIMS Transaction Server. Next preset log time indicating that the G2 Server is running properly. This information window will be updated as logging times pass, when machines come online or go offline and when a tag is changed.

When you see the following information, the G2 Server is operating correctly and is collecting data from any online blenders.

G2 Version 3.x.xx
(DataServer) using "C:\g2\g2data" for database directory.
Starting Inventory Management
Next preset log time is at …(date and Time)…
Serial#: xxxxxx
Ext Ctrl: ON/OFF
AIMS: ON/OFF
Blenders: xxx
DNS Crtl: ON/OFF
Key: 1
Comm Port: COM1/COM2
Blender status messages…

Once this information has been displayed then the Gravimetric Gateway® Client may be started. All operations and user interfaces are done from the Gravimetric Gateway® Client.

Initiating Blender Communications

The G2 Server Does not automatically scan for blenders on the MLAN network. When WSBs are introduced to the MLAN network, they must be added manually using the G2 Client's **Edit Blenders Screen**. When a blender goes OFFLINE, G2 will continue to monitor that blender for up to 1 hr. This period cushions any noise or failed communication. However, after the 1 hr is up, the G2 Server will no longer probe the blender. Unless an operator initiates a probe, by clicking on "Add/Update" from the Blender Edit screen, that blender will stay OFFLINE.

For information on how to use the G2 Clients please read section IX, Client Operation and Administration. For information regarding how to set up and configure a TCP/IP network that will

allow G2 Client computers to connect remotely to the G2 Server please read the following section, **Setting Up Your Gravimetric Gateway® Client Network.**

Rebuild/Verify Database

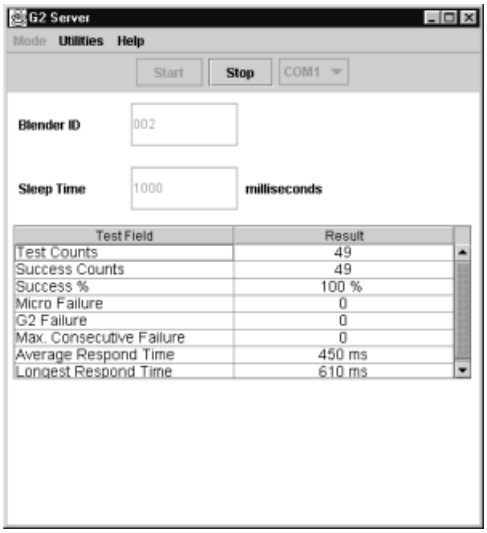
During the startup of the G2 Server, G2 accesses the databases and is able to determine if there is a problem with a database. If a problem is detected with a database, this utility screen provides a tool to recover a corrupted database. If a database is determined to be corrupted, enter this screen, select the database that needs to be repaired and click Recover.

Ping Test

The G2 Server communicates with the Maguire Weigh Scale Blenders constantly. Communicates with the blenders is accomplished in most cases using the COM port and the RS-232 line run out to the blenders. The Ping Test Utility tests the quality of the communication through a timed response test. If you have concerns about the quality of communicates to one or more blenders, use this test to determine if there is a problem.

How to use the Ping Test:

1. Stop the G2 Server.
2. Enter the Blender ID number of the blender to be tested.
3. Enter a sleep time. The Sleep time is the time interval between Ping Tests (1000 milliseconds is one second).
4. See below on how to read the results of your test.



How to read the Ping Test results:

The important information that will be helpful in determining communication quality is the Respond Time and Micro Failures. The optimal response time is about 470 milliseconds or about half a second.

Communication Quality Test Summary

Test Count: Total number of test communications

Success Count: Total number of successful communications

Success %: Percentage of successful communications

G2 Failures: The G2 Server will re-attempt to communication with a controller for a total of 10 tries in a row before failing. If 10 micro failures occur consecutively, this will indicate that G2 would have failed to communicate while communicating with this controller.

Micro Failures: A micro failure indicates that the controller failed to respond within a 4000 ms wait time. Intermitting micro failures with successes may indicate line noise.
Max Consecutive Failures: The maximum consecutive micro failures. 10 consecutive micro failures would be the same as 1 G2 failure.

Average Respond Time: Average time the Communication Quality Test utility waited for a response.

Longest Respond Time: Longest time the Communication Quality Test utility waited for a response.

After each communication attempt the QCT Utility will sleep for the set sleep time in milliseconds and test again. The CQT Utility will generate a micro failure after a 4 second (4000 ms) attempt. The CQT Utility will generate a G2 failure to communicate after 10 consecutive failed attempts. A failure will be displayed as “Respond Time: 4005 ms failed”.

What will cause micro failures?

Generally poor communicate will be caused by what is known as line noise. Line noise can be generated by magnetic fields from surrounding electrical lines, fluorescent lighting, or static electricity from material handling systems. Failures in communication are either due to no communications at all such as if the WSB was not physically turned on or the RS-232 and or the MLAN communication wiring were not connected or faulty wiring. Other causes for poor communicates can be a large number of blenders on a single line of RS-232 or the distance from the G2 computer to the blenders with communication failures. Generally the upper limits for communication to blenders is 10 WSBs and 1000 feet. To view information on how to correctly wire the MLAN network, read the MLAN Protocol manual available for download from www.maguire.com. Failures will also occur in extremely noisy conditions where repeated attempts to communicate with the controller are degraded by outside interference.

Output of the QCT Utility is sent to a file called ComTest.txt, which will be located in the c:\g2\g2data directory.

Troubleshooting A Noisy Line

Line noise is generally due to outside electrical interference with the MLAN communication line running from the computer to the controller. Possible causes of line noise include bundling the MLAN wiring with high voltage lines or wire tying the MLAN communication wire to conduit containing high voltage or high amperage electrical lines. Also keep all communication lines away from all vacuum loader conveying lines. Conveying plastic produces extreme static charges. An electrical line, even in conduit that runs next to a vacuum line, can introduce extreme static pulses into the processor. Keep these lines separated from conveying lines. For more information on wiring considerations read the MLAN Protocol manual available for download from www.maguire.com

For questions or help in troubleshooting contact:

G2 Server Command Line Options

All command line options are appended to the end of the command line in the G2 Server's shortcut by right-clicking on the shortcut and choose properties. "Target" is the command line.

Multiple Ethernet cards in the G2 Server PC

In some cases the G2 Server may have multiple Network Interface Cards (NICs) installed giving the G2 Server access to two or more networks. With multiple NICs, you may need to specify which network the G2 Server will listen for G2 Clients. This is accomplished by specifying on the command line the I.P. address of the NIC that is connected to the network where the G2 Client PCs are located.

`ip=#.#.#.#`

Where #.#.#.# is the I.P. address of the NIC that is connected to the network of G2 Client PCs.

Example command line:
C:\g2\jre\bin\javaw.exe -cp C:\g2\g2.jar -DGG_HOME=C:\g2 -DGG_DATA_HOME=C:\g2\g2data dac.G2Interface **ip=10.0.0.109**

RMI Port Conflicts

In some cases other Java applications will attempt to use the default RMI port of 1099, which G2 also uses by default. When that happens you may see the following message or something similar: *Java Remote Method Invocation (RMI) NoRouteToHostException.* To change the RMI port G2 uses, specify the RMI port at the G2 Server command line. In this example port 5011 is used but valid ports are 1 through 65535. Because of the wide range used by other programs, we recommend using ports in the 5011 through 5049 range unless conflicts with other programs occur.

`server=5011`

Example command line:
C:\g2\jre\bin\javaw.exe -cp C:\g2\g2.jar -DGG_HOME=C:\g2 -DGG_DATA_HOME=C:\g2\g2data dac.G2Interface **server=5011**

Then in the Client software, your Gateway in the Gateway screen will be specified with the port appended to the gateway name or IP address as follows:

`localhost:5011`
or for I.P. addresses (use your IP):
`192.168.1.125:5011`
You will then connect to the G2 Server running on the new RMI port.

Ping retries - # times it tries to bring a blender online (like add/update): **pr=**
Ping timeout - value in seconds, default is 2 seconds: **pt=**
Retries - # retries for any command (default is 4): **rt=**
Port timeout - Time G2 waits for a command to come back before considering it dead (default 5 seconds) **to=**

G2 Watchdog Timer

In G2 versions 4.0 and later, a time value can be entered to shutdown the G2 Server if communication over the COM port does not occur after a specified time in minutes. This timeout value is designed to work with the Watchdog option of the G2 Server and is intended to stop and close the G2 Server after the elapsed time. The G2 Watchdog will then restart the G2 Server automatically.

Using the G2 Watchdog

The G2 Watchdog is a separate program designed as a means of monitoring the G2 program and was created to deal with specific issues where computer COM port activity stops for unknown reasons. The G2 program, when set to monitor COM port activity using the Watchdog Timer (see previous section) will detect a lack of COM port activity for a specified amount of time and shut down. The G2 Watchdog in turn is monitoring the G2 Server. When the G2 Server self-terminates, the G2 Watchdog re-starts the G2 Server, and typically restores COM port activity. This Watchdog feature typically is only necessary if there is a problem with COM port activity ceasing occasionally.

Usage:
The G2 Watchdog is not installed into the start menu. Instead a shortcut called Watchdog_G2_server will be placed in the G2 program folder (by default c:\g2). To launch the G2 Server with the Watchdog monitoring program, use the Watchdog_G2_server shortcut. You can copy this shortcut to the desktop for easy access if desired. This shortcut will launch a monitoring program, which in turn will launch the G2 Server.

When launched from this shortcut, the G2 Server will observe a COM port activity timer. If a preset amount of time elapses without any COM port activity, the G2 Server will exit. The G2 Watchdog, monitoring the G2 Server process, will detect that the G2 Server has exited and will re-start the G2 Server. The timeout value is set by default to 15 minutes. Typically 15 minutes is 5 minutes longer than the longest possible interval that COM activity may not occur under normal circumstances. The timeout value is set in the Watchdog_G2_server shortcut's target field as *wd=900* appended to the end of the command line. The value is in seconds. This may be changed if necessary. To change the timeout value in the Watchdog_G2_server shortcut, right-click the shortcut and modify the value at the end of the field labeled **Target. Example command line:**

C:\g2\jre\bin\javaw.exe -cp C:\g2\g2.jar -DGG_HOME=C:\g2 -DGG_DATA_HOME=C:\g2\g2data dac.G2Interface **wd=900**

The G2 Watchdog will also restart the G2 Server if the G2 Server process is terminated and not shutdown properly. The G2 Watchdog will not restart the G2 Server if the G2 Server is shutdown using the Stop and Exit button of the G2 Server. When the G2 Server is shutdown properly, the Watchdog will also exit.

Clicking the X of the G2 Watchdog program will hide the G2 Watchdog although it will still be running.

The G2 Watchdog display when it was started and how many times it has restarted the G2 Server. This information is also stored in a log file called Watchdog.log in the c:\g2 folder.

G2 Client Operation – A more in-depth view of the Client

Client Overview
The G2 Client is the portion of the G2 software that operators use to control the Maguire Blenders. The G2 Client itself does not collect data from the blenders. Data collection is the job if the G2 Server. The G2 Client connects to the G2 Server, either directly on the same computer or across a TCP/IP network. For the G2 software to communication with the Maguire Blenders, only one copy of the G2 Server must be running. Multiple G2 Clients can be running at one time. All G2 Clients must connect to the G2 Server to access the databases of collected information and to control the Maguire Blenders.

The G2 Client operates the same whether an operator is using the client in Licensed Mode, Lite Mode or Demo Mode.

The G2 Client allows the operator a wide range of control over the blenders as well as many ways to view data collected over time from the blenders.

Features available through the G2 Client includes, but is not limited to the following:

- **PRECISE WEIGHT of all materials processed**
- **SETTINGS - Sending pre-defined recipes and retrieval from blenders**
- **RECIPES – building, reporting and downloading**
- **WORK ORDERS - reporting and downloading**
- **OPERATOR NUMBER - reporting and downloading**
- **REPORT GENERATING on material usage.**
- **DATA ANALYSIS – Historical or live Trending, in a graphical representation or reports**
- **PLANT OVERVIEW**
- **EXTRUSION CONTROL - Monitoring, Controlling and Recipe Downloads**
- **LINE RECIPE MANAGEMENT - Creating, Downloading**
- **ADVANCED INVENTORY MANAGEMENT SYSTEM (AIMS) – Monitoring levels, Ordering of Material**
- **REMOTE KEYPAD CONTROL**
- **ACCESS TO BLENDER PARAMETERS**

The G2 Server organizes and tracks your **material usage**, allowing you to gather accurate information according to the following factors:

- **TIME**
- **DAY**
- **BLENDER**
- **WORK ORDER**
- **OPERATOR**
- **RECIPE**
- **LINE**
- **LINE RECIPE**
- **COST**

The G2 Client Interface

Each G2 Client started will have a menu system where all G2 client screens can be accessed. Multiple G2 Client screens can be opened at any time and will float, as it's own window within the G2 Client. Docked within the Client is the Client Alarm Toolbar.

Client Alarm Toolbar

In the G2 Client is a movable pane containing six Alarm Icons. These icons are visual aids to help bring the operators attention to alarm states that may occur during operation and allow quick access to important information. The Icon Toolbar may be detached from the G2 Client or may be docked at the top, bottom, on the left or right of the G2 Client. Docking control of the Alarm Toolbar is done though the menu under Main, Toolbar. To detach the toolbar, click the dotted area of the toolbar and drag it off the G2 Client. This is useful if the Client is minimized but the user needs to be aware of alarms. To reattach, either drag the Alarm toolbar back onto the Client or use the menu controls. Alarm icons are as follows:

Network Status Alarm

Connected Disconnected

Network Status indicates the network connection between the G2 Client and the G2 Server. When the Client has a connection to the G2 Server the icon will show a connected network. When the Client loses its network connection to the server it will appear with a red X. Causes of a network alarm may include a disconnection to the network or the G2 Server has been shut down. A disconnected Network Alarm will also be displayed if the G2 Client is started up before the G2 Server is started.

Blender Alarm

Normal Alarming

The G2 Server detects Blender Alarm states and will visually show an alarm state in a blender as pictured above. Normal operation of blender will appear as a blender controller with normal activity. When an alarm is detected in a blender the alarm light on the blender will appear as a blinking, enlarged light. By clicking on the Blender icon when alarming more immediate information can be viewed in a pop-up window. This information included the date, Blender I.D., the state and any associated messages.

Alarm states are as follows:

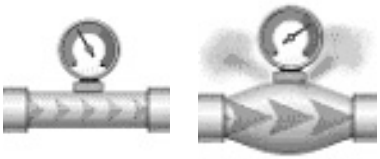
1 = Alarm Silenced (at the controller)	16 = No Pulse	22 = Weight Drop
2 = Component Alarm	17 = XUL Limit	23 = MCT Parameter
3 = Batch Alarm	18 = Max XCV voltage	24 = Alternate Color
4 = Bailout Alarm	19 = Max TCV voltage	25 = Mixer off
5 = Dump Alarm	20 = Over Weight	26 = G2F Parameter
6 = No Alarm (alarming corrected)	21 = Wait For Recipe	

AIMS Alarm

Normal Alarming

If AIMS is enabled the AIMS alarm icon will be displayed. In a normal state the AIMS alarm will appear to be pointing in the green area with a blinking green light. When AIMS detects that a material is in need of re-ordering the AIMS alarm will appear to be pointing in the red zone and with a blinking, red light. By clicking on the AIMS icon when alarming more immediate information can be viewed in a pop-up window. This information included the material in need of re-ordering, the Quantity on hand and the number of days late for re-ordering this material. For more information on AIMS see *Advance Inventory Management System* on page 75

Throughput Alarm



Normal Alarming

The G2 Server monitors throughput of all materials in the material database. If throughput in all blenders is as expected the normal throughput will be displayed as a pipefitting demonstrating a normal flow of material and a gauge in the green zone. If throughput exceeds the expected throughput rate as entered in the material edit screen an alarm state will occur as a bulging pipe with a larger amount of material flowing through it. The gauge will be in the red zone and steam will be exiting the pipefitting. By clicking on the throughput icon when alarming more immediate information can be viewed in a pop-up window. This information will show the material or materials that are exceeding the expected material throughput.

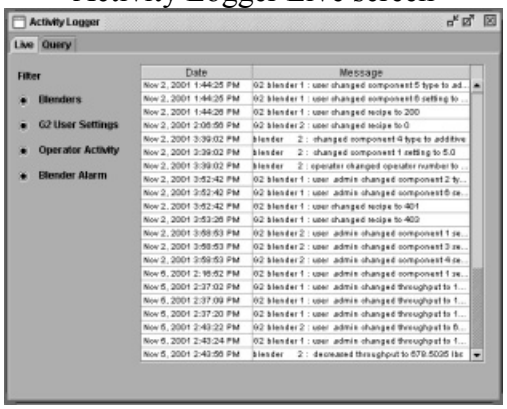
Activity Logger

Clicking the Activity Logger icon will display the Activity Logger screen. The G2 Server monitors, displays and logs activity initiated by any G2 Client connected to the G2 Server. This information can be display in real-time or retrieved and reviewed from the Activity logger database by clicking on the Activity Logger icon.

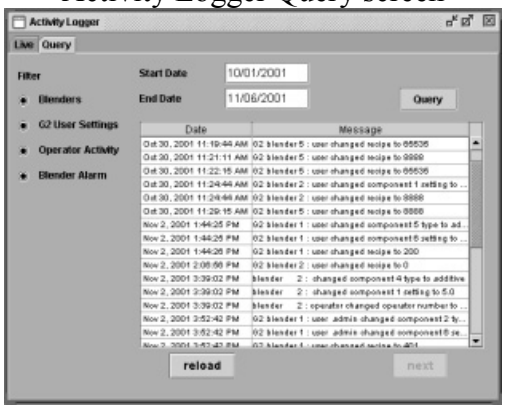
Click either the Live tab to view activity in real time or click the Query tab to review previously collected activity. Both the live and query windows will display activity by date and a brief, descriptive message. Both will have to ability to filter information by Blender, G2 User Settings, Operator Activity and Blender Alarm. Selecting a filter will allow that information to be displayed. When using the Query window, select a date range by clicking in the date window and use the pop-up calendar to change the date range. When the date range has been entered, click the Query button. All records within that date range that fit within the selected filters will be displayed.

The Activity Logger window may be minimized or closed and will continue to log activity to the window in a scrollable format. When the G2 Client is closed, the logged activity is stored in an activity database.

Activity Logger Live screen



Activity Logger Query screen



G2 Monitor

Clicking the G2 Monitor icon will display the G2 Monitor screen. The G2 Monitor displays the status of communication downloads to each WSB on the MLAN network. Each download is displayed on the G2 Monitor screen with the following information.

Finished Time This is the time stamp of the when the download occurred

Item Item is the type of download. Indicated with icons or parameter names. Parameter names can be found in the MLAN Protocol Manual. Possible Icons and what they represent are as follows:

 Down Stream Rate Icon – Indicates that a change in the down stream rate has been sent to the WSB.

 Down Stream Throughput Icon – Indicates that a change in the down stream throughput has been sent to the WSB.

 Down Stream Voltage Icon – Indicates that a change in the down stream voltage has been sent to the WSB.

 Throughput Icon - Indicates that a change in the Throughput has been sent to a WSB.

 Recipe Icon – Indicates that a recipe change has been sent to a WSB.

Value Value is the parameter value or recipe name.

Blender Blender is the I.D. number of the Blender.

Status Status is the current state of the download indicated by icons.
The icons are as follows:

 Download in progress icon – Indicates that the download is currently in progress.

 Download complete icon - Indicates that the download has completed successfully

 Error icon - Indicates that the download has failed.

Brief Explanation of Client Menu Options

Whether you are using the Gravimetric Gateway® Client Software on the same machines as the G2 Server or using the Client software on a Windows operating system located somewhere on the network and access the server remotely, the menu of commands are basically the same. The following is a brief description of each menu item.

The Gravimetric Gateway® Client's main menu consists of the following items: Main, Edit, Download, View, Control, Reports, and Help. Each item is a category pertaining to specific functions available through the client software. The following is a brief explanation of each of these functions detailing what they are and how you may use them. Each screen may be resized and moved within the G2 Client interface and multiple client screens may be open and displayed simultaneously.

Main - Main consists of Gateways, Import Data, Export Data, Setup and Exit.

- **Gateways -** Gateways are Gravimetric Gateway® Servers. This screen is used to create, edit and delete gateway information as well as connect to Gravimetric Gateway® Servers. For G2 servers running on the same machine as the client software enter "localhost" otherwise a TCP/IP address or the computer name (Host Name) of the G2 Server on the same domain network is used to connect to remote location G2 Servers. The Client software will automatically attempt to connect to the "localhost" computer unless a default host is specified.

- **Import Data -** Import Data is used for importing database information from previous versions of MLAN for Windows. Importing covers materials and WSB recipes at this time. For more information on how to prepare the data from earlier versions of MLAN for importing into the Gravimetric Gateway® Server see Import Data on page 39

- **Export Data -** Export Data is used for exporting database information to a file. Several file formats are supported.

- **Setup -** Setup is for setting a standard format of the date, time, weight units, and language across all client screens of a single G2 Client installation. Setup also allows you to set the "end of day" time for report generating, Pop-up messages for alarms, and enabling or disabling security. Screen colors may also me changed in setup as well as the print format.

- **Purge/Archive -** Purge/Archive allows a user with security clearance to archive and purge data from the totals database limited by an end date. Also an advanced purge allows selected files to be purged and archived based on Start and Stop date, WSB, Recipe, Work Order and Operator.

- **AIMS History –** AIMS History is for viewing and purging the AIMS History database. AIMS, short for the Advanced Inventory Management System, logs all activity to the AIMS database. The logged records can be viewed and/or purged though the AIMS history screen and may be filtered based on a Start and stop date, a specific Material Code, Supplier and P.O. number.

- **Security -** G2 Server allows limited access to critical data through 5 levels of security clearance**.**

- **Certificate -** The Certificate screen is used to make changes to the hardware key, such as adding to the number of blenders allowed, enabling extrusion control and AIMS, Advanced Inventory Management System. Updated Certificate Registration numbers are entered here. Certificate numbers are supplied by Maguire Products Inc.

- **TooBar –** This menu item is for setting the toolbar location.

- **Exit -** Exit will exit the client software. Any data that has been entered into the data fields but not saved to the database will be lost when you exit the client. Exiting the Client software does not shut down the G2 Server. G2 Server shutdown is executed in the G2 Server interface.

Edit - Edit consists of WSB Recipes, Materials, Lines, Line Recipes, Retrieval Times and Blenders. This group of functions is for editing the following items.

- **Blender Recipes -** For creating, editing and deleting recipes in the G2 Server's recipe database.

- **Materials -** For creating, editing and deleting materials in the G2 Server's material database.

- **Lines -** For creating, editing and deleting lines of multiple WSBs in the G2 Server's line database.

- **Line Recipes -** For creating, editing and deleting line recipes in the G2 Server's line recipe database.

- **Retrieval Times -** For creating, editing and deleting of retrieval times in the G2 Server's retrieval times database.

- **Blenders -** For manually setting the status of blenders on the MLAN network as well as manually adding a blender to the network.

- **Supplier -** For entering information on suppliers of material. This information is used with the Advanced Material Management System (AIMS).

- **Receive -** For entering information on shipments of material. This information is used with the Advanced Inventory Management System (AIMS).

- **Language -** For multilingual versions of each screen as well as custom translation of individual words.

Download - Download consists of Recipe to WSB and Line Recipe to a Line. This group of functions is for sending recipes and settings to blenders on the MLAN network.

- **Recipe to Blender -** For modifying or downloading a recipe including operator number and work order number to ONE selected WSB.

- **Line Recipe to a Line -** For modifying or downloading a line recipe to a selected WSB line.

View - View consists of Blender, Line, Plant, AIMS and Trend. This group of functions is for viewing current status blenders or lines on the MLAN network.

- **Blender -** For viewing information pertaining to a specific Weigh Scale Blender.
- **Line -** For viewing a selected line of WSBs, including recipes, materials, settings and current status. This screen also allows viewing materials in pie chart format.
- **Plant -** This screen is used for monitoring all activity within a plant including WSBs, lines and material usage including cost per hour.
- **AIMS -** AIMS or Advanced Inventory Management System is used for monitoring material inventory levels. AIMS will prompt the user when material levels reach a predetermined level and can be set to automatically order material from suppliers.
- **Trend –** Trend is used to track data from a single WSB and display the data in a graphical format for quick analysis. Data such as the % of mix, throughput, material usage and variance from the targeted amount of material can be displayed over time or cycle from previously collected data or live as the data occurs.

Control – Control consists of Blender Keypad, Control Line, and DNS Control. This group of functions is for controlling blenders or lines on the MLAN network.

- **Blender Keypad –** The Blender Keypad, when enabled, allows remote access to keypad functions enabling the operator to perform most keypad functions from the G2 Client.
- **Control Line -** Control Line is used for operating extrusion control.
- **DNS Control –** DNS Control is used for Line and Downstream Control.
- **Yield Control –** A graphical representation of a 1 to 7 Line Extrusion Control Screen. Information displayed on this screen can be monitored in real-time as well as modified.

Report - Reports consists of Filter Edit and Material Usage.

- **Report Filter Edit –** This screen is for creating pre-defined filters, which may be saved for use when generating reports. Pre-defined and saved filters can be used when generating reports in the Material Usage screen. When using a filter in the Material Usage screen, the filter may be adjusted without changing the original filter saved in the filter database.
- **Material Usage** - Reports may be broken down by the following criteria: Weigh Scale Blender, Line, Recipe, Line Recipe, work order, operator number, retrieval time, day and a dump of all material usage reports. Report may be further refined through an advanced report generating tool using logical operations. Generated reports may then be printed out to a printer, a formatted file or a non-formatted file.

- **Blender Throughput -** The Blender Throughput Report screen is used to generate reports based on average throughput, total throughput and the percentage of total uptime of a particular blender or multiple blenders.

- **Inventory –** The Inventory screen is used for analyzing the current or historical inventory levels of one or more materials.

Help - Help displays information **About** the G2 Software including the version number, serial number and number of authorized blenders. Also under help is **Reinitialize**, which is used for re-initializing the G2 Client software.

Using the Client Screens

The Gravimetric Gateway® Client is how the user will communicate with, and operate the Gravimetric Gateway® Server. Although both parts of G2 are integrated together, the G2 Server and the G2 Client operate independently of each other. The G2 Server may be used as a stand along computer to communicate and control the WSB network using the installed G2 Client software. Using a single computer for both the G2 Server and the G2 Client requires the TCP/IP network protocol to be installed on the computer. In most cases TCP/IP will already be installed on the Windows machine usually along with Dialup Network. If, however it is not configured to use TCP/IP, please read "Configuring TCP/IP in Windows 95/98/ME". In addition it is possible to perform additional installations of the G2 Server/Client software on separate Windows machines located on the same network as the server. These additional installations only require that the G2 Client be run to communicate with the G2 Server located elsewhere on your network. For information about setting up and configuring a TCP/IP network, please read, **Setting Up Your Gravimetric Gateway® Client Network.**

For the G2 Client installed on the G2 Server computer, the gateway is considered a "**localhost**" gateway. All data within the G2 databases is stored on the computer running the G2 Server. Data collected from the blenders is not stored on a G2 Client machine installed elsewhere on the network. All communications to the WSB is initiated from the G2 Server only.

Gateways

What this screen is used for: Entering location(s) of G2 Servers. Clients connect to G2 Servers via this screen.

The **Gateway** screen looks like this:

This screen is for adding, editing, and removing local gateways. This screen will be used mainly when you are operating from a client machine that is not running the G2 Server but accesses the Server located somewhere on the network. When you start the G2 Client on the G2 Server machine the client software automatically connects to the G2 Server located on that machine, connecting as "localhost". If you are using the G2 Client on a computer that also runs the G2 server there is no need to connect to a gateway since it is done automatically. In some cases, however, a user may want to connect to another G2 Server from a G2 Server they are operating on. In this case you would provide a local gateway in this screen. If you have installed the G2 Client software on a Windows machine located somewhere on the network, you will need to provide the IP address of the G2 Server, which would be located on the same network as the client itself.

Address: This field is used for the gateway. The gateway is an IP address or the computer name (Host Name) of the G2 Server on the network. For more information on using a network with your G2 server see Network Installation and Configuration on page 109.

Local Gateway - A gateway is considered local if it is on the same network as the client machine. A local network can be as simple as two computers, one a client and the other the server connected together by a network using TCP/IP or as large as the server and the client machines being located somewhere on the world wide web. In short, a local gateway pertains to connecting though a network.

Gateway Description: This field is used to help better identify the gateway. This field may be up to 80 characters in length and may consist of alphabetic characters (including accented), 0 through 9, -, /, @, #, !, $, and % characters.

Default Host – For automatic connection to a G2 Server that is accessed over a network, “Default Host” may be checked off to connect to a specific G2 Server when starting the G2 Client.

To enter a new gateway connection, type the IP address of the G2 Server on the network (For more information on using a network with your G2 server see **Setting Up Your Gravimetric Gateway® Client Network**). Enter a description (optional). If you want to make a specific G2 Server the default Server to connect to when the Client is started, check off Default Host. When you finished, click the Add/Update button to save this entry to the Gateway Database.

To connect to a gateway that has already been entered into the gateway database simply click on the local gateway in the local gateway list and then click the connect button. Once connected the status located at the to of the gateway screen will display “Currently connected to <IP ADDRESS or Localhost>“

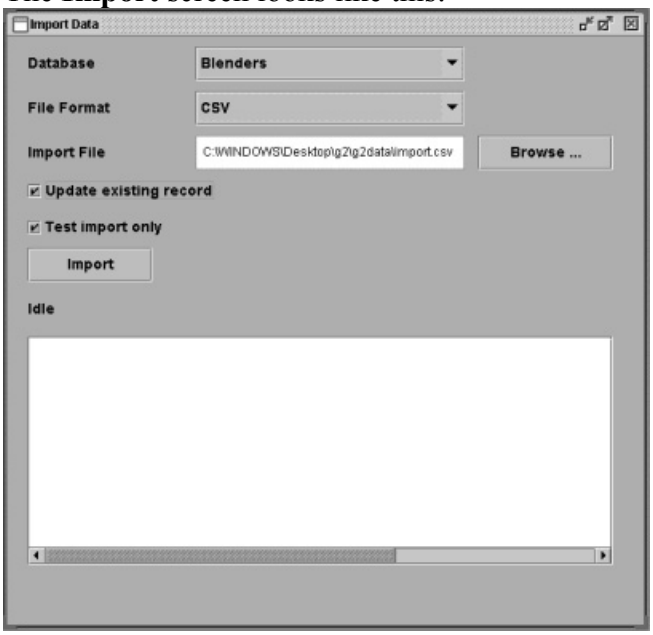
When your G2 Client is connected to the gateway you are ready to begin.

When you wish to re-connect to the G2 Server located on the same computer as your Client, enter "localhost" as a local gateway and connect to that to re-establish communications to the Server.

Import Data

What this screen is used for: Importing data into the G2 databases.

The **Import** screen looks like this:



Import
Overview - The import screen provides the functionality for database files to be imported into the server databases.

Database format - The formats to which the database files must conform are.

1. comma separated (typically ending with the extension .csv)
2. fixed format
3. quoted comma separated
4. tab separated (typically ending with the extension .txt)

Furthermore, the fields must appear in the order described in the tables below.

Importing - The following outlines the steps that are required to properly import a database file to the server.

1. Select a database from the database drop down list,

2. Select the format of the database file from the file format drop down list,
3. Select the database file, Check off options desired, and
4. Import

*Note: If importing database file records to the server, the first ten record's import results will be displayed in the import results text field. A dialog will prompt to see whether the import should continue or abort.

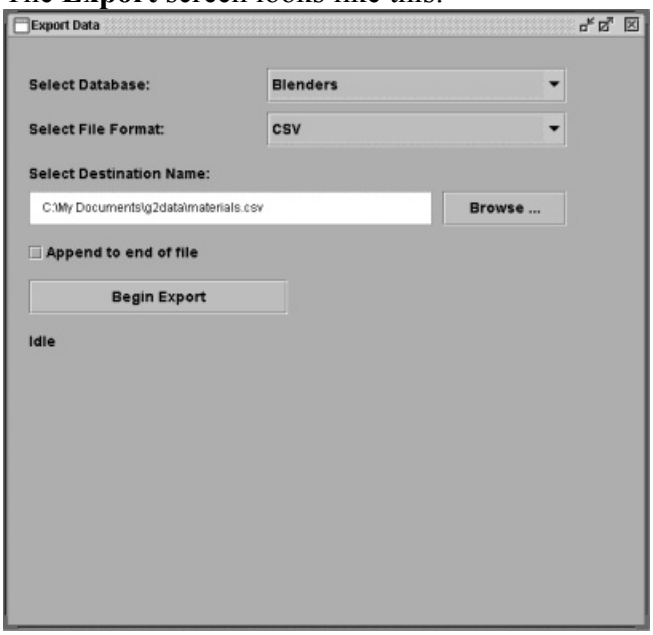
Import screen explained

Database	specifies which database will receive the import
File Format	specifies the format of the database file
Browse	invokes a dialog window that allow a database file to be chosen
Update existing record	allows existing records to be updated
Test import only	goes through the import process without actually importing the database file records to the server
Import	imports the database file to the server with respect to the options
Status bar	display status
Import results text field	display results of import
Exit	exits the Import interface

Export Data

What this screen is used for: Exporting data from the G2 Server databases into common format files.

The **Export** screen looks like this:



Overview - The export screen provides the functionality to export server databases to database files.

Database format - The following lists the formats to which the database data files can be exported.

1. comma separated (typically ending with the extension .csv)

2. fixed format
3. quoted comma separated
4. tab separated (typically ending with the extension .txt)

The fields will appear in the order described in Tables x.xx.

Exporting - The following outlines the steps required to properly export database information to a database file.

1. Select a database
2. Choose a file format
3. Select a target file
4. Check append option if appending data to the end of a database file, and
5. Export

Export Screen explained

Database	specify which database to import from
File format	specify the format of database file
Browse	allow a destination file to be chosen
Append	append to target database file
Begin export	exports database to target database file
Exit	closes this screen
Status	display status

Database File Formats

The following tables describe one record in a database file. One record occupies exactly one line in a database file.

Note: All digits can be prefixed with a +/- sign.

Blender Table

Blenders Database File Format

Occurrence	Field	Description	Fixed Field Length
1	Blender Id	Unique blender id	5 digit
	Description	Description of blender	80 character description
	State	State of blender	5 digit
	State Time	Time blender entered current state	19 digit
12	Material Code	Material Code	20 characters
	Material Type	regrind, natural, additive	3 digit
	Material Setting	Settings	5 digit
10	Tag Value		20 characters

	Change Tag Time	19 digit
10 x 12 (There are 12 entries of this field for each occurrence of the 10 above two fields.)	Change Tag Total	19 digit
10	Log Tag Time	19 digit
10 x 12 (There are 12 entries of this field for each of the 10 above entries.)	Log Tag Total	19 digit

Every blender holds a blender id, description, state, and state time. Each blender also holds:
A WSB recipe which includes twelve materials (material code, type, and setting).
10 (xxx), and
10 (xxx)

Each record has the following order:
blender id, description, state, state time,
for I = 1..12 (material code[i], type[i], setting[i]),
for i = 1..10 (tag value[i], change tag time, for j = 1..12 (change tag total[i,j])),
for i = 1..10 (log tag time[I], for j = 1..12 (log tag total[i,j]))

Each record order is as follows:
id, description, state, stateTime,
material code[1], material type[1], material setting[1], //twelve materials a blender can store
material code[2], material type[2], material setting[2],
...
material code[12], material type[12], material setting[12],
tag value[1], change tag time[1], //10 tag value and change tag time fields
change tag totoal[1,1], //12 change tag totals follow each of the above
change tag total [1,2],
change tag total [1,3],
...
change tag total[1,12],
tag value[2], change tag time[2],
change tag total[2,1],
change tag total[2,2],
...
change tag total[2,12],
tag value[3], change tag time[3],
...
tag value[10], change tag time[10]
change tag total[10,1]

```
  change tag total[10,2]
  ...
  change tag total[10,12]
log tag time[1],                          //ten log tag time fields
  log tag total[1,1],                      //twelve log tag total fields follow each
  log tag total[1,2],                      //log tag time field
  log tag total[1,3],
  ...
  log tag total[1,12],
log tag time[2],
  log tag total[2,1],
  log tag total[2,2],
  log tag total[2,3],
  ...
  log tag total[2,12],
log tag time[3],
...
log tag time[10],
  log tag total[10,1],
  log tag total[10,2],
  log tag total[10,3],
  ...
  log tag total[10,12],
```

Line Recipe Table

Line Recipe Database File Format

Occurrence	Field	Description	Fixed Field Length
1	Name	Line Recipe Name	20 characters
	Description	Description of Line Recipe	80 character description
12	Blender Id	Blender Id	5 digit
	Recipe Name	Recipe Name	20 characters

Each line recipe has a name and an associated description. Each line recipe can include twelve blenders, each with it's own recipe.

The following describes each record's order: line recipe id, description, 1st blender, 1st blender's associated recipe, 2nd blender, 2nd blender's associated recipe, ...12th blender, 12th blender's associated recipe

Lines Table

Line Database File Format

Occurrence	Field	Description	Fixed Field Length

1	Name	Line Name	20 characters
	Description	Line Description	80 characters
12	Blender Id	Unique blender id	5 digit

Each line record has a name and description, and in each line there can be twelve blenders.

Each record entry order is: name, description, 1st blender, 2nd blender, ... 12th blender

Materials Table

Materials Database File Format

Field	Description	Fixed Field Length
Code	Material Code	20 characters
Description	Material Description	80 characters
Supplier	Material Supplier	40 characters
Cost	Material Cost	19 digit
Type	Type of Material	3 digit [1..3]
Available	Quantity on Hand	19 digit

Each material record includes the six fields listed above. The following describes each record's order: code, description, supplier, cost, type, available

Material Usage Table

Material Usage Database File Format

Field	Description	Fixed Field Length
Blender Id	Unique blender Id	5 digit
Material Code	Material Code	20 character
Tag Type		5 digit
Start Time		19 digit
Stop Time		19 digit
Material Usage		19 digit
Tag Value		20 character

Each record contains the fields listed above in the order: field, id, material code, tag type, start time, stop time, material usage, tag value

Retrieval Time Table

Retrieval Time Database File Format

Field	Description	Fixed Field Length

Time	Retrieval Time (minutes since midnight)	5 digit
Description	Description	80 characters

Each retrieval time record includes a time and description field. They appear in the order: time, description

WSB Recipe Table

WSB Recipe Database File Format

Occurrence	Field	Description	Fixed Field Length
1	Recipe Name	Recipe Name	20 characters
	Description	Description of recipe	80 character description
	Batch Weight	Batch weight for recipe	10 digit
	Recipe Number	Recipe's unique number	10 digit
	Recipe Type	4 or 12	3 digit
12	Material Code	Code for each material in recipe	20 characters
	Material Type	regrind, natural, or additive	3 digit
	Material Settings	Setting for each material	5 digit

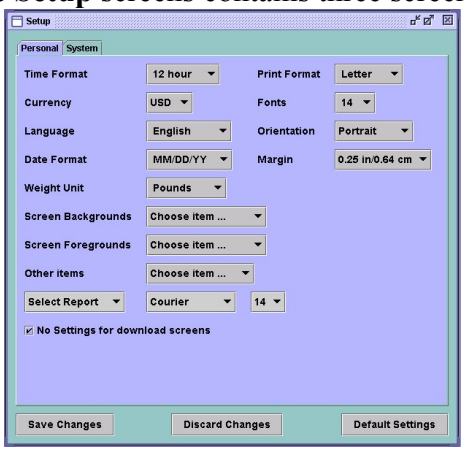
Each WSB recipe has a name, description, batch weight, recipe number, and recipe type associated with it. Each WSB recipe can consist of 12 materials with type and setting.

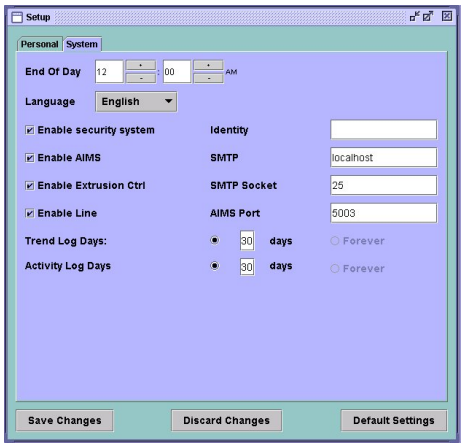
The format for each record is as follows: recipe name, description, batch weight, recipe number, recipe type, 1st material code, 1st material type, 1st material setting, 2nd material code, 2nd material type, 2nd material setting, 3rd material code, 3rd material type, 3rd material setting, ... 12th material code, 12th material type, 12th material setting

Setup Screen

<u>What this screen is used for</u>: Defining settings of the G2 Server or G2 Client program.

The **Setup** screens contains three screens and looks like this:





The Setup screen consists of two tabs, personal, and system.

The Personal tab is for setting a standard format for the language, date, time, weight units, print format, currency, fonts across all client screens and the option to change client screen colors. Specific font and font sizes can be attributed to specific reports screens as well. The date format options are month/day/year, day/month/year, or year/month/day. The time format is either 12 hour or 24-hour format. Weight units are pounds, ounces, kilograms or grams.

The System tab contains the following system settings: End of day, Language, enable/disable Security, enable/disable AIMS, enable/disable, Extrusion Control, enable/disable Line control, Trend Logging, Activity Logging, and DNS Control priorities.

End Of Day Time
Setup allows you to set the time that will determine the "end of day" time for report generating. The "end of day" time works like a retrieval time however what sets it apart from a retrieval time is that the "end of day" time will determine the ending time of a generated report. It is important to understand that the "end of day" time is not necessarily the end of the 24-hour day but rather the end of the last shift of the day, which in some cases will extend into the next physical day on the calendar. An example of how the "end of day" time will work would be as follows. If the last shift of a day (3rd shift) starts at 11pm and ends at 7am the next morning, then the "end of day" time is set to 7am. A report that is generated for a single day would include the entire last shift that extended from 11pm into the next morning ending at 7am the following day. Material processed during most of the 3rd shift was actually processed during the next day on the calendar but is included in the report because the "end of day" time. If day to day reporting is to be generated based on the calendar days and not to include a shift, which overlaps dates, leave the "end of day" time set to 12:00 AM.

Language - Language may be changed across the G2 Server and Client. Choices are listed in their respective language and they are English, Dansk, Nederlands, Suomi, Français, Deutsch, Italiano, Português, Español, Svenska, Türkçe, Custom 1, Custom 2, and Custom 3. Custom 1, 2 and 3 allow for further editing of the language database.

SECURITY - When security is enabled only someone logged in with Security Administration privilege has the authority to enable or disable security. When enabling or disabling security, the G2 Client must be closed and reopened before the Security screen is made available in the menu. The G2 Server does not have to be restarted for security changes to take effect.

AIMS – Enabled or disabled. See AIMS, Advanced Inventory Management System for more information on settings for AIMS.

Extrusion Control and Line – Extrusion Control is an option feature of the G2 software. If this feature is enabled, the Control Line, DNS Control, and Yield Control screens will be enabled.

DNS Control
The Setup screen also allows for setting DNS control priority. Item in the first column under DNS Control are Throughput, Line Speed and Yield. Using the first row as an example (Throughput, Line Speed and Yield) the following rules apply:

For Throughput, if Line Speed is selected, when manually adjusting Throughput the Line Speed will be altered to change the throughput, but Yield will remain the same. If Yield is selected rather than Line Speed, Yield will be modified when adjusting Throughput.

Identity, SMTP, SMTP Socket and AIMS Port are configuration setting for AIMS, Advanced Inventory Management System.

Identity - Identifies your organization (company name). This information will be used during the ordering process with your suppliers when using AIMS.

SMTP - This is the IP address of your email server. In most cases your Internet Service Provider or ISP also provides email with your dialup account. The information provided by your ISP will include an address for outgoing mail and may be labeled as "SMTP". This address is usually labeled as "smtp.yourprovider.com" or as a period separated number (i.e. 192.192.0.23). Enter this address into the SMTP field. If you do not know what your SMTP address is, please contact your Internet Service Provider.

SMTP Socket - SMTP Socket is the Mail Server's socket number. In most cases this number is 25 unless otherwise noted by your service provider.

AIMS Port - This is the AIMS transaction server port. This should be set to 5003 by default. This port number is configurable in the event that it is necessary to change the port number due to a conflict with another program.

Purge/Archive Screen

<u>What this screen is used for</u>: CAUTION: This screen is for deleting some or all totals data from the G2 totals database.

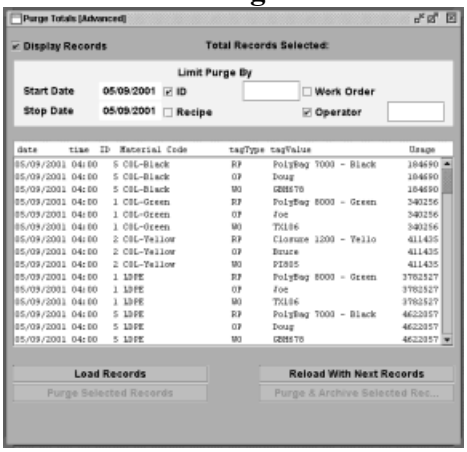
The **Purge/Archive** screen looks like this:

The **Purge/Archive** screen is for purging and archiving records from the totals database. Records in the totals database can be purged (removed) from the database based on an end date. Entering an end date means that all records on and before that date will be removed from the database. Purging records will permanently delete record with no means of recovery. Purge and Archive Records will first export the records to a file format that can be re-imported into the G2 Server. For more advanced selection of records for purging or purge/archive select Advanced Purge.

Advanced Purge/Archive Screen

<u>What this screen is used for</u>: CAUTION: This screen is for deleting selected records for the G2 totals database.

The **Advanced Purge/Archive** screen looks like this:



The Advanced Purge/Archive screen is for selectively purging or purging/archiving records from the totals database. Advanced Purge allows the user to selectively purge records based on a start and stop date, a specific WSB, work order, operator and/or recipe tag. Also the user can selectively choose records individually for purging or purging/archiving. When using Advanced Purge there are two methods the user can use for purging or purging/archiving. First the user can select all records based on the selected *Start Date* and *Stop Date*, *WSB Id*, *Recipe*, *Work Order*, or *Operator.* To do so, enter the *Start Date* and *Stop Date*, and optionally, *WSB Id*, *Recipe*, *Work Order*, or *Operator*. Do not check off the *Display Records* box. Next, click *Load Records*. All records within the entered parameters are selected. If a parameter is changes the records will have to be reloaded. At this time the user may purge or purge/archive the records by clicking the appropriate button. If it were desired to individually select records further, then check off the *Display Records* box and using the mouse, click each record you would like to purge or purge/archive. When the records you wish to remove from the database are selected click either the purge or purge/archive button. To more easily manage the records in the advanced purge screen the number of records that are displayed at one time is limited to 100 records. If the *Reload With Next Records* button is not grayed out then that means there are additional records that meet the desired parameters. Click the *Reload* button to display the next 100 records. If records were selected for purge in the list, they will need to be purged before the next set of records will be displayed.

AIMS History

<u>What this screen is used for</u>: Viewing and deleting AIMS records

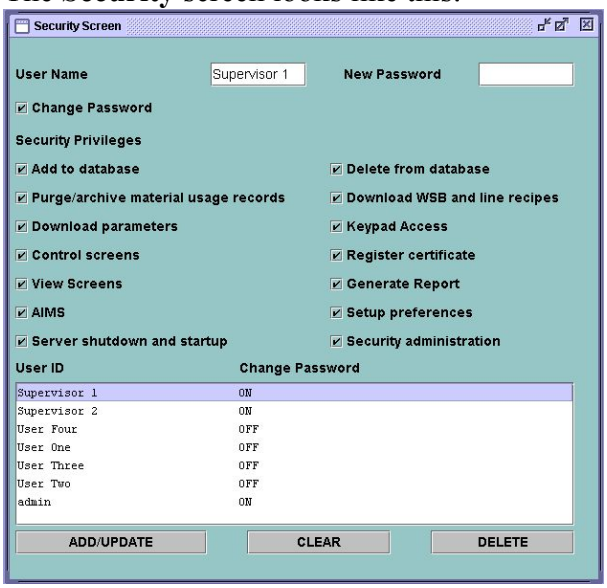
The **AIMS History** screen looks like this:

AIMS History is for viewing and purging the AIMS History database. AIMS, Advanced Inventory Management System, log all activity to the AIMS database. The logged records can be viewed and/or purged though the AIMS history screen and may be filtered based on a Start and stop date, a specific Material Code, Supplier and P.O. number. Selecting the Material Code, Supplier and/or the P.O. will require information to be entered into that field. To view records that fit the entered criteria, check off the Show Records check box. All displayed records will be displayed with the date the record logged, the material code, the P.O. number, supplier, the quantity ordered, the quantity received, the date the material was ordered and the date the material was received. Records may be purged by simply entering a start and stop date and clicking the Purge button or may be refined to specific records by using the filters. Purging may be further refined though selecting specific records by clicking on and highlighting a displayed a record. Multiple records may be selected by holding the control key down as additional records are selected. A range of multiple records can be selected by first selecting a record, then while holding the shift key down, select a record above or below the selected record. Any records in between the two selected records will also be selected. When the records you wish to purge are selected, click the Purge button.

Security Screen

What this screen is used for: Setting security privileges for operators accessing the G2 Server.

The **Security** screen looks like this:



The Security screen, when enabled in the setup screen, allows the creation of user accounts with custom security restrictions. These security restrictions can limit access to the G2 Server and the G2 Client functions.

Enabling Security

To enable security, open the G2 Client and from the main menu go to the Setup screen. Under the System tab, check off Enable Security System. By default the account **admin** is created when security is enabled. At that time you must supply a password for the **admin** account. The user account **admin** is granted all privileges including the ability to add additional users and assign those users specific security privileges. While security is enabled, the **admin** account cannot be deleted.

Creating Custom Accounts

When security is enabled customized accounts can be created restricting users to specific tasks. By default the **admin** user is granted the privilege to create additional users.

To create new users with custom privileges, in the G2 Client, open the Security screen from the Main menu. Enter a User name and password. Select each privilege that this user is to be granted. After making your selections, click **ADD/UPDATE** to save this user and add the account to the security database. All users will be displayed in the Security screen User ID list.

The following table explains each privilege:

Change Password	This user will be granted the privilege of changing their password.
Add to database	This user will be granted the privilege of adding to the screens that fall under Edit in the menu.
Purge/Archive material usage records	This user will be granted the privilege of using the Purge/Archive screen for purging and archiving material usage records.
Download parameters	This user will be granted the privilege of sending parameter changes to the blender in the Blender Edit screen.
Control screens	This user will be granted the privilege of using the control screens including Blender Keypad, Control Line and Yield Control.
View Screens	This user will be granted the privilege of accessing the View screens including View Blender, View Line, View Plant, AIMS and Trend.
AIMS	This user will be granted the privilege of using AIMS.
Server shutdown and startup	This user will be granted the privilege of starting, stopping and closing the G2 Server.
Delete records	This user will be granted the privilege of removing items from the screens that fall under Edit in the Client menu.
Download WSB and line recipes	This user will be granted the privilege of downloading WSB recipes to blenders and downloading Line recipes to lines.
Keypad Access	This user will be granted the privilege of using the Remote Keypad.
Register certificate	This user will be granted the privilege of applying certificate updates to the G2 software.
Generate Report	This user will be granted the privilege of generating material usage reports.
Setup preference	This user will be granted the privilege of making modifications to the **System** and **Yield Control** settings in the Setup screen. The user will retain control over their **Personal** settings in the setup screen, which are specific to each individual G2 Client installation and not all client installations.
Security administration	This user will be granted the privilege of creating, modifying and deleting user accounts in the Security screen.

Certificate Registration Screen

<u>What this screen is used for</u>: Applying Certificate upgrades to the G2-SA for additional blender licenses or added features.

The **Certificate** screen looks like this:

The Certificate screen is used for upgrading your copy of the G2 software enabling additional blenders, referred to as seats, and to unlock additional features.

The G2 Server/Client software is distributed free of charge both on CD-ROM and for download on the Internet at www.maguire.com. This distributed version is the full version software but in not fully operational. The free software is limited to running as a demo package and/or as G2 Lite, which offers support for a single Maguire Blender. In this free release extrusion control is also not available.

To unlock the features of the G2 software package, a signal amplifier with a built in security key is required and is available from Maguire Products Inc or from a distributor of Maguire Products. The security key is configured with a registration certificate number that is entered into the G2 Client's Certificate Screen. The Registration Certificate number works in conjunction with the security key within the signal amplifier. Every signal amplifier has a unique serial number. When you are provided with a Certificate number to upgrade your software, this number will be specifically designed for your signal amplifier's security key.

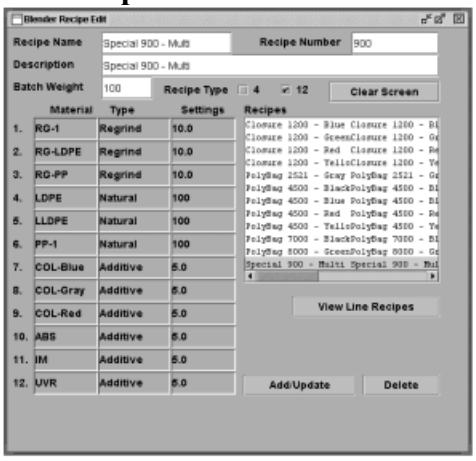
To update your software, simply enter the Certificate number exacted as it is written being aware that it is case sensitive. After entering the Certificate number correctly, you will need to close the G2 Client and G2 Server and then start it again for the changes to take effect.

Note: Even if your blender network is communicating using Ethernet, the security key / signal amplifier must be connected to an available serial port on the G2 Server so the G2 Server can verify your security key licensing status.

Blender Recipe Screen

What this screen is used for: Creating recipes that will be downloaded to the blenders. Recipes consist of materials added into the material edit screen, material type and settings for each material.

The **Recipe Edit** screen looks like this:



This option is for ADDING and CHANGING WSB RECIPES. You will need to add materials to the material database first before building recipes, since the recipes consist of various materials.

FOUR-software allows only 3 components to be entered. These are regrind, color, and additive. Natural does not need a setting since natural always consists of the entire mix less the portion designated as the other components. However, you will specify what the natural component is, but you will not give it a setting.

TWELVE-software allows entry of up to TWELVE component settings.

NOTE: When you get started building recipes, you will discover that you must have some materials listed in the material database from which to choose. Recipes can only be constructed from materials in the MATERIALS database. To make the job of getting started a little easier, you could place a few generic materials in the MATERIALS file. For example: enter three materials called “additive”, “regrind”, and “natural.” Then if you wish to enter a setting for an additive into a recipe but do not know exactly what color it will be at this time, you may just call it ADDITIVE.

REMEMBER: Without a material in the MATERIAL database, you will not be able to enter a setting into the RECIPE file.

Recipe Name: Identifies the recipe in the recipe database and on printed reports. The name may contain alphabetic (including accented), 0 through 9, -, /, @, #, !, $, and % characters. The number of characters in the name field may be up to 40 characters.

Recipe Number: Identifies the recipe within the WSB controller and is used to cross reference the recipe number in the blender with the recipe in the recipe database. The number can range from 100 to 32767.

RECIPE AUTO DOWNLOAD - Introduced in G2 version 2.2, Recipe auto download enables the operator to cause the WSB controller to automatically download a new recipe from the G2 Server at the end of the next cycle. Auto downloads requires that the recipe that is to be

downloaded have a Recipe Number that is unique from all other recipe numbers in the G2 recipe database and the recipe number range must be between 100 and 999. Recipes set for auto download must match the controller in software type if the controller is a 4-component controller. If the controller is a 12-component controller, recipes may be either 4 or 12 component recipes. For more information on recipe auto downloads, see Recipe Auto-Download on page 70

Recipe Description: This field is used to help better identify the recipe. It is displayed with the recipe on the Recipe Edit Screen, Recipe Download Screen, View Weigh Scale Blender Screen, and the recipe reports. This field may be up to 80 characters in length and may consist of alphabetic characters (including accented), 0 through 9, -, /, @, #, !, $, and % characters.

Batch Wt: The Batch Weight field is used when you want to run Batches with the Weigh Scale Blender. For more information on batches see the blender's manual.

Materials: This column contains the material names that are used in this recipe.

Type: This column contains the material types (i.e. regrind, natural, additive) for each material.

Setting: This column contains the setting for each material. This number is expressed as a percentage. For more information on batches see the blender's manual.

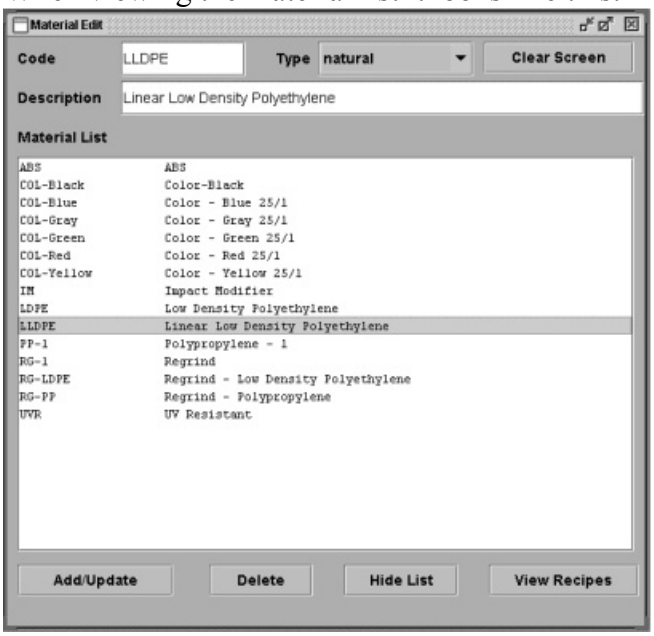
Recipe Type: This is used to determine which controller can receive this recipe (4 Vs 12 component controller software).

To build a recipe add a recipe name, description, recipe number, batch weight, recipe type and any materials along with their types and settings. Materials are chosen from the material list. When all field and settings are entered click the Add/Update button. To clear the screen of all entries click the clear screen button. To delete a recipe choose the recipe you wish to delete from the recipe list and click the delete button. Recipes, which exist in a line recipe can not be deleted until the line recipe has been updated or deleted. Recipes may be updated at any time by editing any field excluding the recipe name. Changing the recipe name essentially creates a new recipe.

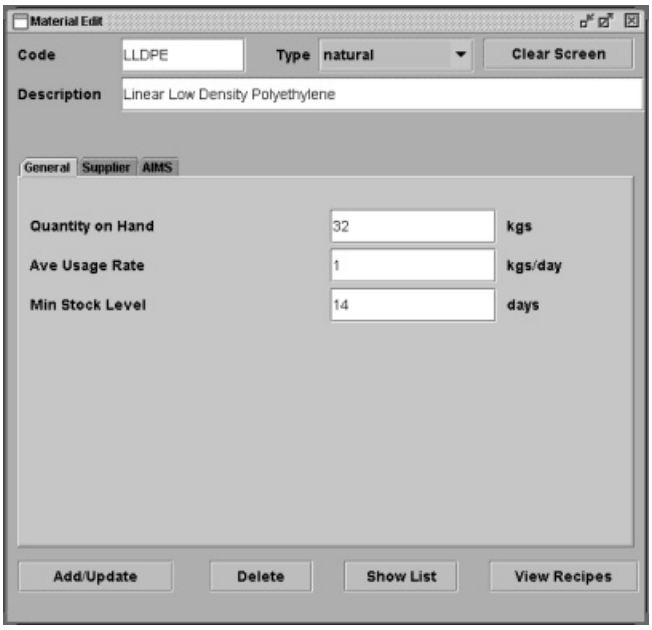
Material Screen

What this screen is used for: The Material screen is used for adding materials to the material database and entering AIMS information. The **Material Edit** screen has two appearances. Hiding the Material List, accesses AIMS.

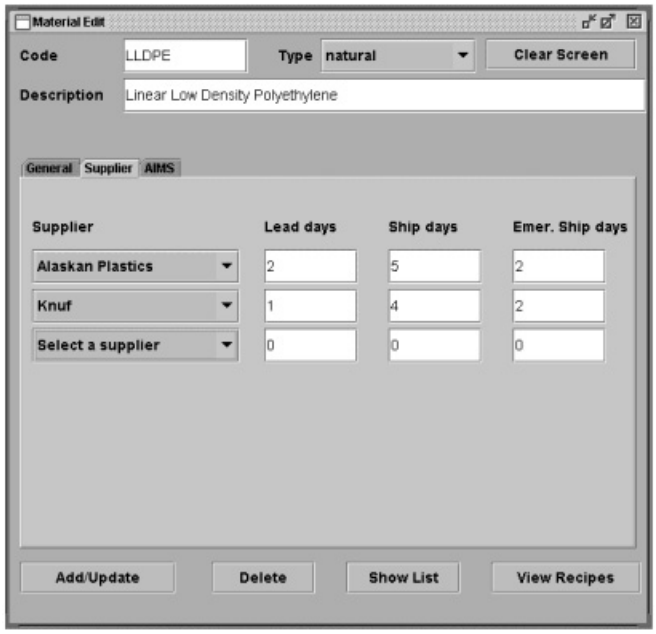
When viewing the material list it looks like this:



Material edit screen with the material list hidden and the General tab selected:



Material edit screen with the material list hidden and the Supplier tab selected:



Material edit screen with the material list hidden and the AIMS tab selected:

The Material screen is for adding, changing, or deleting the Materials in the material database. This database should contain every material that you may possibly use in your plant. Recipe are built from these materials therefore you must have all materials that are to be used in recipes entered into the material database to ensure accurate tracking of all materials. Additional information, specified below, is required for each material if the Advanced Inventory Management System (AIMS) is to be used for automated material level monitoring and automated ordering.

Recipes that specify material names are restricted to selecting from materials that are contained in this database. If a recipe uses a material that you have not yet identified, make an entry in the database named something general like REGRIND, NATURAL, MATERIAL, COLOR, or UNKNOWN, and then specify this material in the recipe.

REMEMBER: All materials in a recipe must be found in the material database.

Code: This is the unique name that you give this material. This is an alphanumeric field with a maximum of 40 characters.

Description: This field is a unique description of each material to help you identify the material. This is an alphanumeric field with a maximum of 80 characters and is optional.

Type: This is the drop down menu allows you to choose a default type for the material. When this material is used in recipes it will automatically default to this type that you choose in the material edit screen. You may change the type when the material is used in the recipe. Default types are regrind, natural, additive and color.

To add a material, enter a Code (name), description, default type, and if AIMS is to be used enter data into the above-mentioned AIMS related fields. When all field are entered click the Add/Update button. To clear the screen of all entries click the clear screen button. To delete a material, choose the material you wish to delete from the material list and click the delete button. Materials, which exist in a recipe, cannot be deleted until the recipe has been updated or deleted. Also recipes, which exist in a line recipe, cannot be deleted. Materials may be updated at any time by editing any field excluding the material code. Changing the material code creates a new material.

The following fields are accessible and required if the Advanced Inventory Management System is enabled. They are edited by selecting on of the three tabs, General, Supplier and AIMS

General Tab:

Quantity on Hand: Enter in this field the amount of Material available at the time of setting up the material in the database. Once entered, the material level will automatically adjust according to consumption and incoming material shipments. This field is protected by user level 3 or higher. If AIMS is enabled this number is used to calculate when material must be re-ordered.

Average Usage Rate: Enter in this field your average consumption rate per day of this material. This average is user defined and will determine if material consumption is within acceptable levels. If consumption is off by 15% above the Average Usage Rate the throughput alarm is initiated.

Min Stock Level: This is the minimal level of material on hand. When this level is reached due to material usage AIMS will alert you and your material supplier if enabled to automatically reorder this material.

Supplier Tab:

Supplier: Select the supplier of the material from this drop down lists. Three separate suppliers may be selected from the Supplier drop-down menus, top being the default supplier and the lower two alternate suppliers. Suppliers are entered in the Supplier screen under the Edit menu. This is an alphanumeric field with a maximum of 40 characters when AIMS is disabled. If AIMS is enabled suppliers listed here are used when material must be re-ordered.

Lead Days: Average number of days your supplier acknowledges your purchase order.

Ship Days: Average number of days required between acknowledgement from your supplier and when the material is actually shipped.

Emer. Ship Days: Shortest number of days required between acknowledgement from your supplier and when the material can be shipped in an emergency.

AIMS Tab:

Advanced Notice: Advanced notice in number of days that the operator of G2 needs to be informed that material is low and needs to be ordered. This number of days is a projection of when you will run out of material based on the minimal stock level of this material.

Auto Order: Checking off this box will enable automatic material ordering from your suppliers through email.

Acknow.: Acceptable number of days for a late acknowledgement. If this number of days exceeds what is specified, an alarm is initiated in AIMS.

Ship: Acceptable number of days for an acknowledgment that the material has been shipped. If this number of days exceeds what is specified, an alarm is initiated in AIMS.

Received: Received in days - Alarm state - Number of days for acceptable lateness
Acceptable number of days for an order of material to be received. If this number of days exceeds what is specified, an alarm is initiated in AIMS.

Normal Order: This is the average amount of material ordered from your supplier. The field following Normal Order is price per unit.

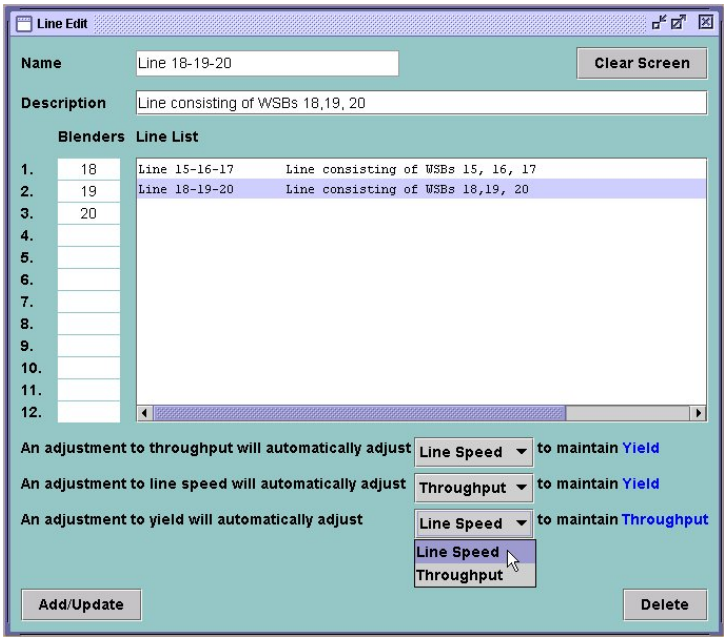
Best Order: This is an amount of material that if ordered, will yield a better price if a bulk purchase is made. The field following Best Order is price per unit.

Minimal Order: This is the minimal amount of material that may be ordered from your supplier in one order. The field following Minimal Order is price per unit.

Line Edit Screen

What this screen is used for: The concept of a WSB Line and a WSB Line Recipe may or may not be used depending on your setup. A WSB Line is a group of blenders, which are, for any particular reason, grouped together and receive recipes from a single download all at one time. The recipes that are downloaded in a single action need not all be the same recipe. Each blender in a line may individually receive it's own predetermined recipe. The only common factor in a line is that each blender in that line receives a recipe when a line recipe is downloaded, all at one time and in one download.

The **Line Edit** screen looks like this:



Before you are able to create and download a line recipe you must first create a line. A line is simply a group of blenders. Each blender is identified by it's own WSB I.D. ranging from 1 to 254. Once you have created a line, you will then be able to create a line recipe that may be used with this line. To create a line you must first give the line a name.

Name: This is the unique name that you give this Line. This is an alphanumeric field with a maximum of 40 characters and is required.

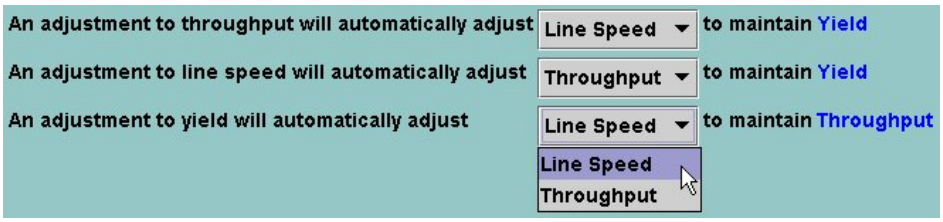
Description: This field is intended for a unique description of each line to help identify this the line. This is an alphanumeric field with a maximum of 80 characters and is optional.

Next you will select a position in the left column to place an active blender. The field highlight will "float" until you click in the position you wish to place an active blender. Starting from the top select a position and move the mouse over to the right and select a blender from the list of blenders. Note: The position of a blender within the 12 possible slots in the left column will be directly associated to that same position when building a line recipe to be used with this line. The position importance will become evident on the download Line Recipe Screen when a line is matched with a line recipe for download. When you have added all the blenders you want to include in the line click the Add/Update button. To remove a single blender from the line, highlight that blender ID by clicking on it and press the delete key on the keyboard. To delete a line, choose the line from the line list and click the delete button.

Setting DNS Control Priorities

In the G2 Client's Line Edit screen the priorities of DNS Control can be set for each line. These global priorities apply to all DNS or Yield control screens. To understand how to set the priorities in Setup, you must first understand what each column represents and how to read the DNS Control table in Setup. Item in the first column under the title *DNS Control* are considered the item you are making a change to when in the DNS Control Screen or the Yield Screen. These items in the first column are Throughput, Line Speed and Yield. When a change is made to the item in the first column, the bulleted item that follows will be the item that will be adjusted, thus maintaining the unselected item in that row.

Using the first row as an example (Throughput, Line Speed and Yield) the following rules apply: For Throughput, if Line Speed is selected, when manually adjusting Throughput the Line Speed will be altered to change the throughput, but Yield will remain the same. If Yield is selected rather than Line Speed, Yield will be modified when adjusting Throughput.



Exceptions to the Setup screens DNS Control Priorities are the following modes of operation:

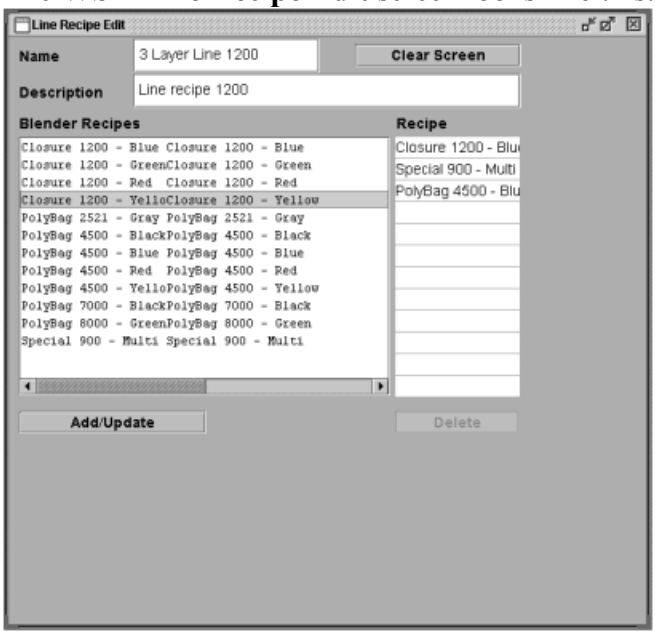
- **YLDX – Single Extruder, Maintain Yield by controlling extruders**
- **YLDT – Single Extruder, Maintain Yield by controlling take-off**

DNS Mode – Co-Extrusion – Setup rules apply

Line Recipe Edit Screen

What this screen is used for: Using pre-created lines, blender recipes are associated to specific blenders within the line. These Line recipes will then be downloaded to lines in the Download Line screen.

The **WSB Line Recipe Edit** screen looks like this:



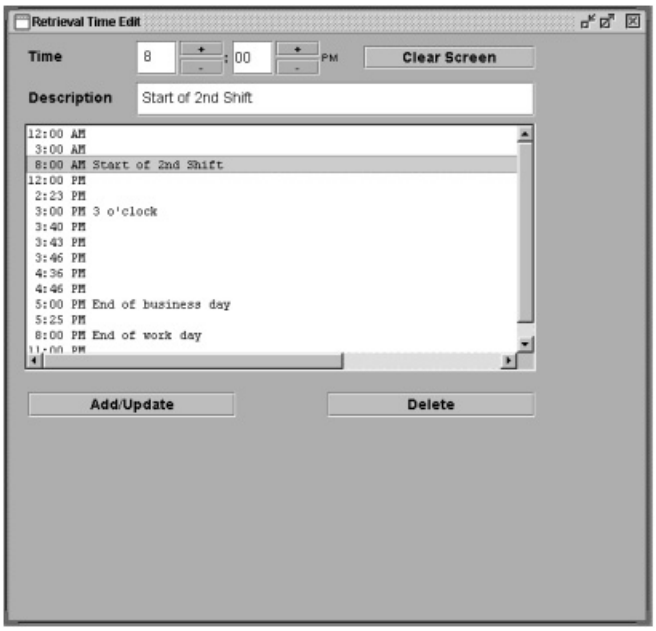
Line recipes are built using lines. Lines, as described in the previous section, are basically a grouped set of blenders. The line recipe screen alternates the center panel to display one of two lists. By using the mouse and placing the cursor over one of two areas the list will change. The lists are display by the following means: Placing your cursor over the line name and description will display the list of Line Recipes. Placing your cursor over the recipe column (on the right side of the screen) will display the list of Blender Recipes.

To build a line recipe you will first type a name and description of the line recipe you want to create or select an existing line recipe for editing. Next move the mouse over to the right column labeled "Recipe". The blender recipes list will appear to the left. Click on a position from top down in the blender column, which will relate to a WSB in that position of a line. The position will highlight in yellow. Next choose a recipe from the blender recipe list. This adds the recipe to that particular position. Next click on any additional positions from top down to add a recipe for that position. When you have added the required recipes to your line recipe click the Add/Update button. To edit a line recipe choose the line recipe from the line recipe list, edit any part of the line recipe excluding the recipe's name and click the Add/Update button. To delete a line recipe from the line recipe database click the line recipe you wish to delete and click the delete button. Clicking the clear screen button will clear any entries in the fields.

Edit Retrieval Times Screen

What this screen is used for: Setting specific times for G2 to retrieve all totals from online blenders.

The **Retrieval Times Edit** screen looks like this:



This screen is for adding or changing retrieval times. Data will be retrieved from ALL WSB units at the times that are listed in this database. Totals for material usage may then be summarized for the time periods between these listed times.

Times should be entered in standard AM/PM format. 24-hour time format is NOT used for retrieval time however report may be generated using a 24-hour time format. To enter the time, click in the time field using the mouse or use the tab key to move the cursor to the time field. Times may be typed in or you may use the up and down arrow keys to increment or decrement the hours and minute. Use the right and left arrow keys to move from hours to minutes to AM/PM. AM/PM is toggled using the up/down arrow keys or spacebar. For NOON, enter 12:00 PM.

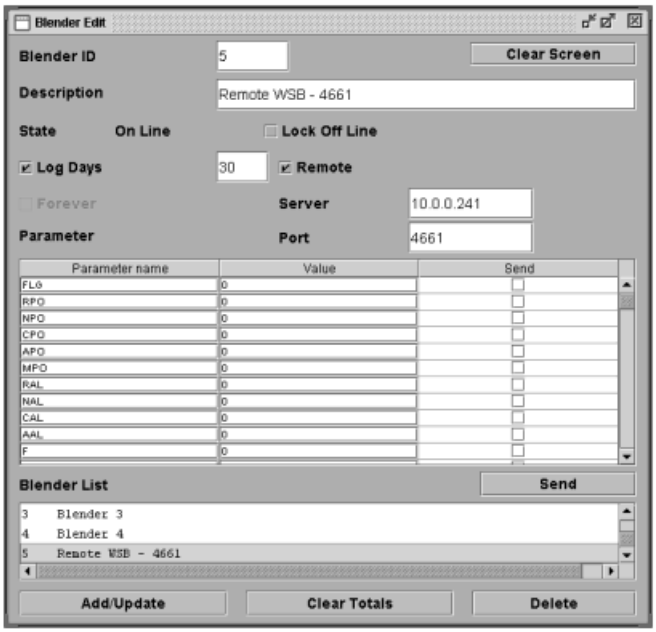
Since reports are run from one selected date to another, it is necessary to retrieve data at least once a day to keep totals properly assigned to the correct date. Therefore, there must always be at least one time in the time list if you wish to generate reports based on material usage.
Description is for your reference only and may be up to 80 characters in length. You are only able to edit the description of a retrieval time. If you change the time of a retrieval time you are essentially creating a new retrieval time.

To create a retrieval time, select the time using the instructions above. Then enter a description. Next click Add/Update to add the retrieval time to the times database. Clicking clear screen resets the time back to 12:00 AM and clears the description. To delete a retrieval time select the time from the retrieval times list and click the delete button.

Edit Blenders Screen

What this screen is used for: Entering blender I.D. numbers to bring blenders online and for accessing / editing parameters with blenders.

The **Edit Blenders** screen looks like this:



The Edit Blender screen is used for maintaining a database of WSB ID numbers and direct access to WSB Parameters. All possible WSB ID numbers, 1 though 254 may be manually entered. Clicking Add/Update will force the G2 Server to probe the WSB and if successfully probed, it will display all current parameter names and values. If any of the WSBs that have been probed and added to the Blender database go offline, the G2 Server will continue to probe the WSB for one hour. If the WSB does not come back online within one hour, it must be manually probed again by clicking Add/Update. Blender Edit is also used for locking a WSB offline to prevent the G2 Server from probing it for information and totals and for removing WSB ID numbers from the database.

WSBs that are "Remote", accessed though a G2 Satellite ComServer, will have their information entered here to enable remote access. Remote access requires use of the G2 Satellite ComServer. For more information see G2 Satellite ComServer in the TCP/IP Network section on page 109. After configuring a G2 Satellite ComServer on your network, the User will enter the Blender I.D., a description and then select "Remote". Selecting Remote will display an area to enter the Server address (TCP/IP) and the port number that the Satellite ComServer is listening to. Enter the I.P. address of the computer on the TCP/IP network. For example, "10.0.0.241" Please note that your network I.P. addresses may vary. For more info on TCP/IP Networks see Network Installation and Configuration on page 109. Next you will enter the port number that you set the Satellite ComServer to listen on. Typically you will have set this port number to a port number between 5005 and 6000. Such as "5005". Once these values are set, click Add/Update to enter the information into the database. The WSB will be probed for information and may cause a delay in the G2 Client's response time until the communications are complete. It may take a few minutes, please be patient.

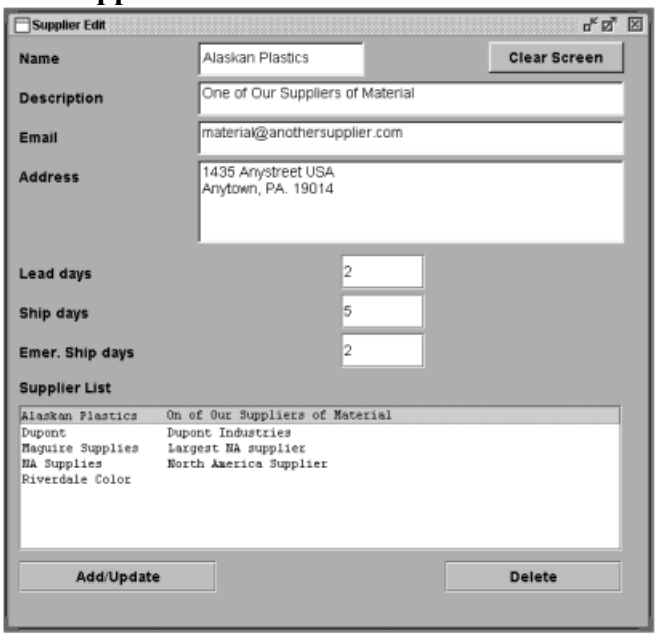
Parameter adjustment is not recommended without knowledge of the WSB parameters. Do Not adjust parameters without an understanding of WSB parameters. For more information please read the MLAN Protocol Manual, available online at www.maguire.com.

G2's Trend feature can be configured for individual WSBs by selecting *"Log Days"* and specifying the number of days you want to log before purging the Trend database or select *"Forever"* to log continuously, archiving every 30 days. Data that is archived may be access as historical data using the Trend Screen. For more information on using Trend, See Trend on page 87.

Supplier Screen

What this screen is used for: Entering Supplier information to be used in AIMS.

The **Supplier** screen looks like this:



The supplier screen is used for entering information on suppliers of material and works in conjunction with the Advanced Material Management System (AIMS). If AIMS is to be used to it's fullest potential, supplier information must be entered. The supplier screen consists of the following fields; Name, Description, Email, Address, Lead Days, Ship Days, Emergency Ship Days and the Supplier List.

Name - Name of Supplier

Description - A Brief description of the supplier (optional)

Email - Email address of the supplier's ordering department. A feature of AIMS is automatic ordering of material from your suppliers through email. The email address entered in the email field should be an address that can be contacted for ordering material.

Address - Street address of your supplier

Lead Days - The number of days between when an order for material is issued and when the supplier ships the material.

Ship Days - The number of days between when a P.O. is shipped by the supplier and when the you receive the order.

Emergency Ship Days - The shortest time interval that a supplier can ship material to you.

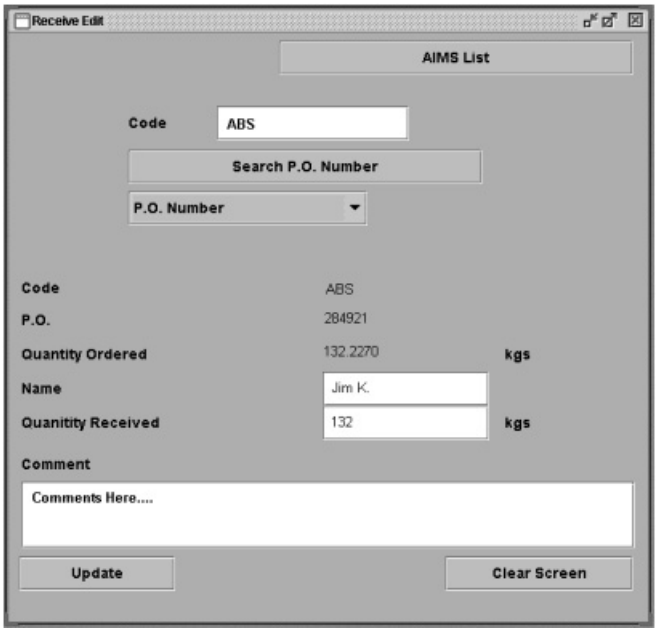
Supplier List - This is the list of suppliers entered into the supplier database. Clicking on a supplier listed in the Supplier List puts the supplier's information in the upper fields for editing.

For more information on how suppliers work with AIMS read the Advanced Inventory Management System section.

Receive Screen

What this screen is used for: When a material is received from the supplier, the operator will enter the material name and quantity received. This is part of AIMS.

The **Receive** screen looks like this:



Search P.O. Number - Search for a purchase order from the list materials received.

Code - Enter your material code (name) you wish to search the AIMS database for any purchase order for this material.

Drop Down List - Results from a search for a PO

AIMS List - Displays a list of materials that have been shipped by the suppliers.

Code - Displayed information for any P.O. selected.

P.O. - Displayed information for any P.O. selected.

Quantity Ordered - Displayed information for any P.O. selected.

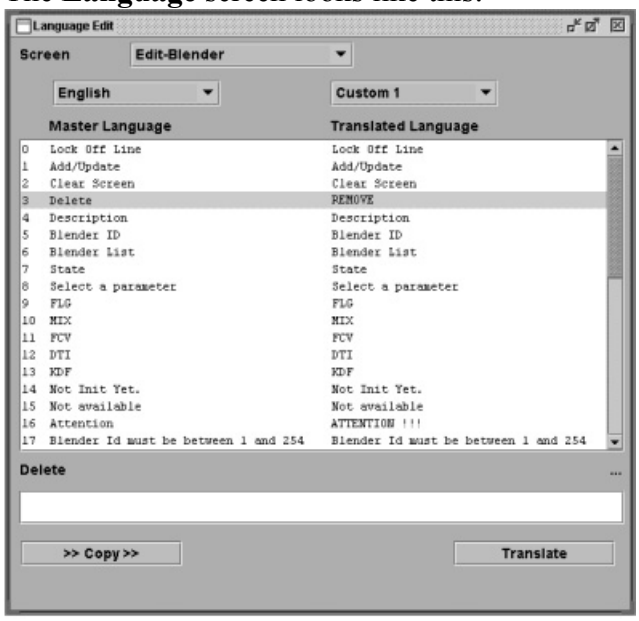
Name - The operator in the receiving dock. This is the person who uses this screen.

Quantity Received - How much received in loading dock.
Comments - Comments may be entered here.

Language Screen

What this screen is used for: Editing text within the G2 language database.

The **Language** screen looks like this:



Language selection for the G2 Client in is changed in the Setup Screen under the Main menu. Languages may be further edited here in the Language Screen. To edit the selected language you will be creating a custom language. Up to three custom languages may be created. To create a custom language, choose the master language that you will be working from and then select the custom language (Custom 1, Custom 2, or Custom 3) from the dropdown list. The master language will not update until a custom language is selected or the screen you want to edit is selected. When creating a custom language some or all of the words of phrases may be edited but all must have an entry. This applies to all screens. This is the reason for the **>>Copy>>** button. When creating a custom language, all screens will have to be loaded and at the very least copied to the translated language. It is necessary to copy the database entries each screen before editing some of the entries unless ALL words and phrases will be manually entered. Once entries have been made into the edited custom language the copy button will overwrite *ALL* entries. To create a custom language select the G2 screen you wish to edit (all screens will have to be edited before the custom language can be loaded in setup). If this is the first time translating this screen into the custom language clicking the copy button will put all entries in the master language into the custom language after which, individual entries may be selected and edited. To edit individual words or phrases, select the word or phrase in the "Master Language" column and type how you would like it to appear in the field below and click the "Translate" button. Up to 3 separate custom language databases may be created and edited. They are labeled Custom 1, Custom 2, and Custom 3. To load the edited language into all G2 Clients you must change the language in the Setup screen under the main menu. to the custom language created in the Language Edit screen (Custom 1, Custom 2, or Custom 3). After selecting the custom language from the drop-down list in the setup screen, click the *Save Changes* button. *Please Note:* Selecting a different language in the setup screen changes ALL clients connecting to the G2 Server.

Individual users may run G2 in the language or custom language of their choice without affecting other users. This is done in one of two ways. One way is to select the language during the installation of the G2 Client. The language selected during the installation will be the default language loaded when the client is started. Changing the default language without re-installing the G2 Client may be accomplished by editing the Client command line batch file. This file may be edited using Notepad. The file is located in the directory that G2 was installed. By default this location was c:\g2 unless a new location was specified during the installation.

To edit the Client.bat file, open Notepad from the start menu. In Notepad click *File*, *Open* and type: *c:\g2\Client.bat (or the custom installation directory)* then click Open. You will see three lines of text. At the end of the third line you will see: *-le English* or the language selected during the installation. Simply change *English* to the language you wish to use as a default language for your Client only. Choose from the list below:

English
Danish
Dutch
Finnish
French
German
Italian
Portuguese
Spanish
Spanish-American
Swedish
Turkish
Custom1
Custom2
Custom3

All screens of *Custom1, Custom2, or Custom3* languages must be edited before loading. An incomplete custom language database will default to English.

The following is a description of the field in the Language Edit screen.

Screen - G2 screens are individually edited by selecting the screen you wish to edit from this drop-down list.

Master Language - This column of words and phrases are the default words for the selected language.

Translated Language - The translated language is one of the three custom language databases selected from the drop-down menu above that column.

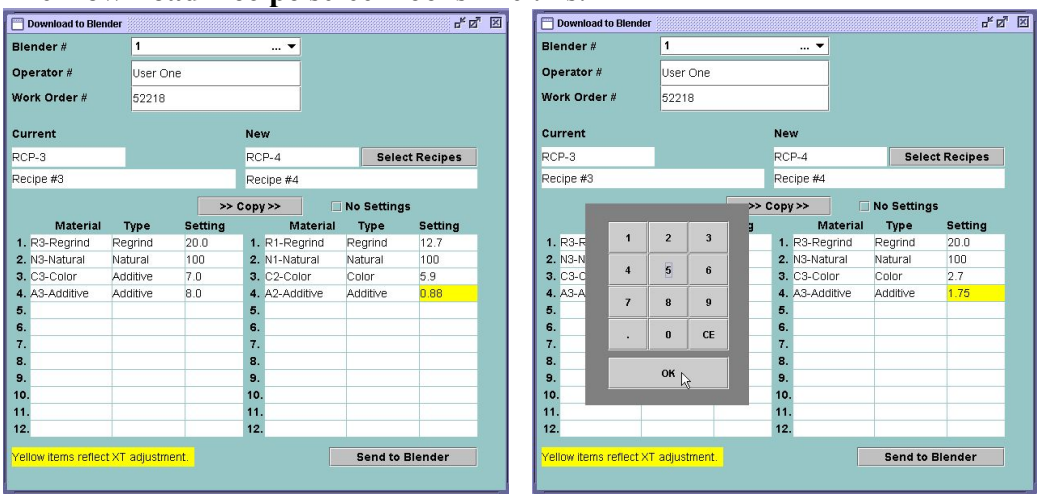
>> Copy >> - Clicking the *Copy* button will copy all the words and phrases from the master language to the custom translated language that has been selected from the drop-down list.

Translate - Clicking the translate button will set the word of phrase in the custom language to what has been typed into the lower field.

Download Recipe to WSB Screen

<u>What this screen is used for</u>: Downloading pre-built recipes consisting of entered materials and settings to online blenders.

The **Download Recipe** screen looks like this:



The download screen is used for either downloading recipes to Weigh Scale Blender or altering the current settings of an online Weigh Scale Blender. Select the WSB that you wish to work with from the complete list of online Weigh Scale Blenders in the drop down list. The current recipe will be displayed including the current settings.

If you wish to download a new recipe to the blender, click the show recipes button. This will display the complete list of recipes from the recipe database. Click the recipe you wish to download to the selected blender. Click the hide recipes button the hide the recipe list. At this point, if needed, you may alter any setting of the materials to be downloaded as well as add/change an operator number and/or work order number. When you are read to download the recipe click the "Send to WSB" button.

If you want only to change the operator number and/or the work order number or adjust the settings, select the WSB that you wish to work with from the complete list of online Weigh Scale Blenders in the drop down list. Click the copy button to move the recipe to the editing area. You may now edit the operator number, work order number and any settings by clicking on them. Edit the operator number and work order number by typing with the keyboard and settings are adjusted by the use of a pop-up keypad. Note: changing the setting for that recipe does not change the setting in the recipe database.

When a recipe is downloaded with settings to a controller that has FOUR software, the thumbwheels will become DISABLED. You may choose not to send the settings by checking the "No Settings" box. Once disabled the thumbwheels can only be re-enabled at the controller by using the password and the "set" key. For more information, see the WSB Manual.

Recipe Auto Download

Introduced in G2 version 2.2, Recipe auto download enables the operator to cause the WSB controller to automatically download a new recipe from the G2 Server at the end of the next cycle.

Auto downloads requires that the recipe to be downloaded have a unique Recipe Number in the range from 100 to 65,536. Recipes set for auto download must match the controller in software type if the controller is a 4-component controller. If the controller is a 12-component controller, recipes may be either 4 or 12 component recipes.

How to Use the Auto Download Feature – Using the auto download feature requires knowledge of the WSB controller. If you are unfamiliar with the controller, please review the controller's manual.

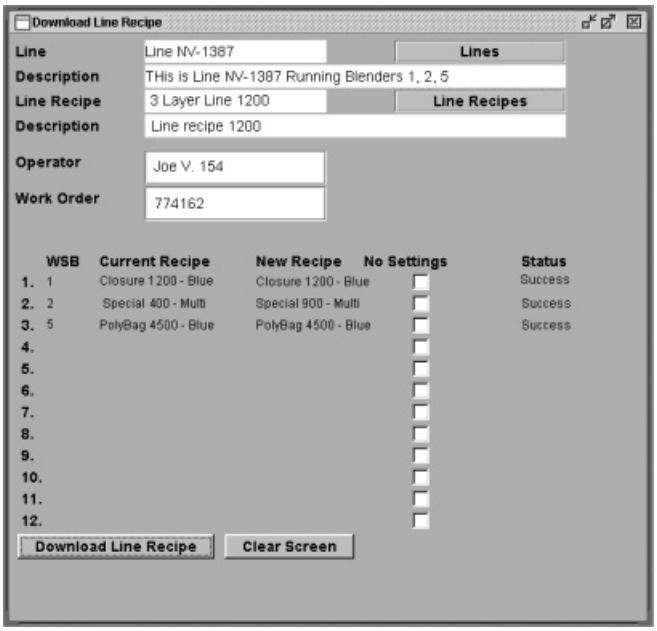
To enable auto download the FLG parameter must be set with the second digit as a 1. Your FLG parameter will read #1### with # being the previously existing number.

To set the WSB to automatically download a recipe at the end of the next cycle, from the WSB keypad press the TAG key three times until you see RCP##### where ##### is the currently loaded recipe number. Enter the recipe number that is to be downloaded automatically. Because the recipe numbers must be a 3 to 5 digit number ranging from 100 to 65,535 and the WSB field for recipe number requires 5 digits, be sure to prefix the recipe number with zeros if necessary. If your recipe number is a 3 digit number this would be entered as 00### where ### is your recipe number**. Note: The 3 to 5 digit recipe number must exist in G2 recipe database.** If recipe number does not exist in recipe database, the WSB controllers alarm will sound and the WSB will display NO MATCH meaning there is no recipe with a recipe number as you entered it. Also if the controller is a 4 software controller and the recipe number entered is for a 12 software recipe, the controllers alarm will and will display NO MATCH and will revert back to the previous recipe. Four software recipes can be downloaded to 12 software controllers.

Download Line Recipe to a Line Screen

What this screen is used for: Downloading Line Recipes (grouped blender recipes) to Lines (grouped blenders).

The **Download Line Recipe** screen looks like this:

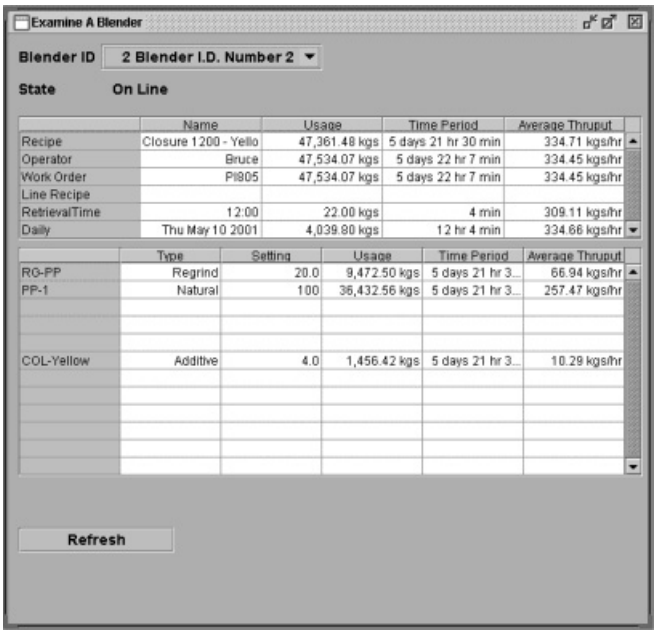


The Line Recipe download screen is used for downloading line recipes to a line of Weigh Scale Blenders. Before downloading a line recipe to a line using this screen at least one line and one line recipe must be created. A line is a group of Weigh Scale Blenders that are grouped together for multiple, simultaneous downloading of recipes and are created using the Line Edit screen. Line recipes are a group of Weigh Scale Blender recipes specifically grouped together for use with a line of Weigh Scale Blenders. Line recipes are created using the Line Recipe Edit screen. To use the Line Recipe Download screen click the “Line” button and select a line from the list of lines. When the line is selected from the list each blender's WSB identification number will be displayed under the WSB column. Also when a line is selected the blenders that are part of that line will be probed to determine the current recipe stored within each blender. The current recipe will be displayed under the Current Recipe column. If no current recipe is displayed, either there is no recipe stored within that blender that exists in the recipe database or possibly the blender is off line. The blender’s current state can be examined by using the Blender Edit screen under Edit in the menu. Next you will click the “Line Recipe” button. Only line recipes that match the line will be displayed. This is why it is important to build your lines and line recipes carefully and match the position of the correct WSB recipe with the intended WSB. Select the line recipe from the list of line recipes. The new recipe that will be downloaded to each blender in the selected line will be displayed under the New Recipe column. If you do not wish to change the current settings of any particular blender in that line when the new recipe is downloaded you must check off "No Settings" for that blender. To download the recipe, click the Download Line Recipe button. After the download has completed the status of the download will be displayed under the Status column. If the recipe has been downloaded correctly the message "Success" will be displayed. Any error in communicating with the WSB will be displayed as "Error".

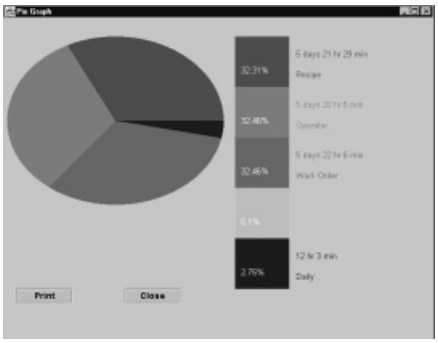
View Blender Screen (Examine a WSB)

What this screen is used for: Examining the selected, online blenders current information.

The **Examine a WSB** screen looks like this:



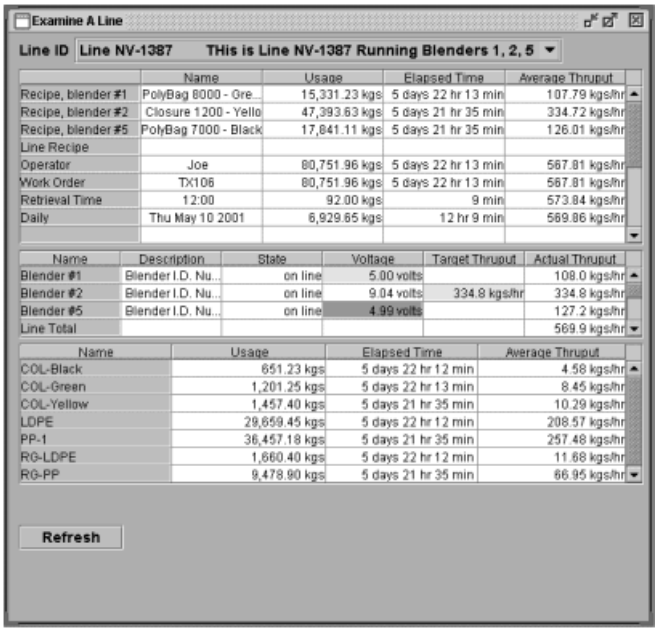
The complete list of WSB units will be displayed in a drop down list. Select the WSB that you wish to examine. Selecting the WSB automatically retrieves information ONE TIME from that particular WSB unit. If you wish to update the information at any time click the Refresh button. The G2 Server will probe the WSB and retrieves information to display in the upper table current recipe, current operator, current work order and current line recipe if applicable, each with material usage, elapsed time and average throughput since the last change of these items. Also displayed in the upper table is material usage, elapsed time and average throughput since the last retrieval time and material usage, elapsed time and average throughput since the beginning of the day. In the lower table each component of the recipe is displayed with their corresponding type, current setting, material usage since the last change, time elapsed since the last change, and average throughput of each material since the last change. Double-clicking columns, usage, time period and average throughput will display a pie chart of information.



View Lines Screen

What this screen is used for: Examining a Line's current information.

The View Lines Screen looks like this:

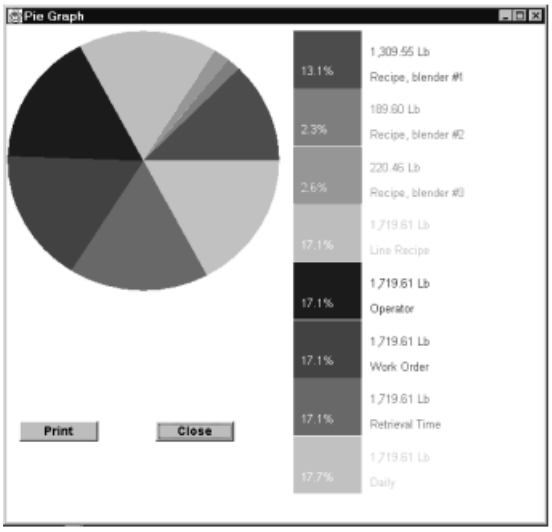


The View Lines Screen is used to view and monitor information generated by the current line being processed. To view information on a particular line you must first choose a line from the Line ID drop down menu. The data will be divided into three tables. The top table lists all data by name in the first column collectively called tags that pertains to this line including recipes, line recipe name, operator number, work order number, last retrieval time, and beginning of day time. The name of these "tags" is displayed in the second column. The third column, labeled Usage, displays the amount of material used since the last change in that particular tag. The fourth column displays the elapsed time since the last tag change. The fifth column displays the average throughput per hour since the last tag change.

The second table displays information related to the weigh scale blenders currently in this line. The second column of this table displays the type of WSB while the third column displays it's state, whether online or offline. The fourth column displays the current voltage the WSB is running. The fifth column displays the targeted throughput set on individual WSBs and the targeted throughput for the total line. The fourth and fifth columns may be displayed in yellow or green. For more information on what each color represents see Line Control Screen above. The last column displays the actual throughput for each WSB and the total line.

The third column displays all materials that are used in recipes in the line. First column displays the name of the material. The second column displays the total usage of the material. The third column displays the time elapsed since the line recipe containing that material had been downloaded and the last column displays the average throughput per hour of that material during the elapsed time.

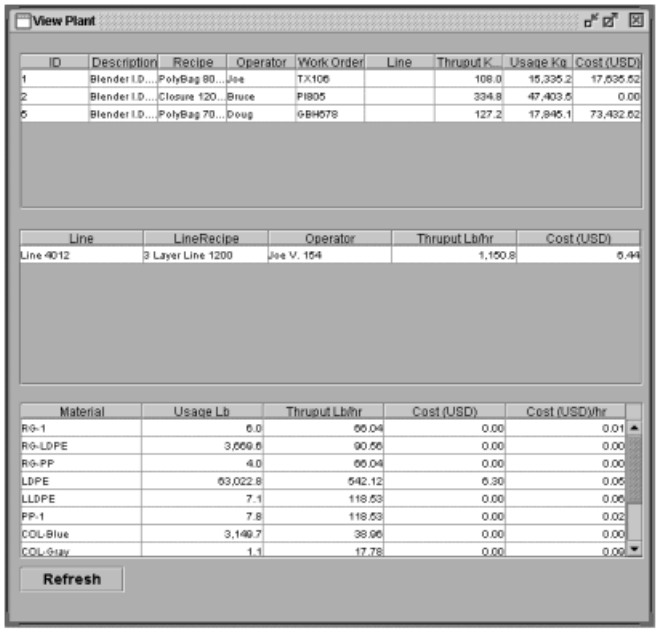
Each column displaying time and usage can be viewed as a pie chart by clicking on any item in that column. Any number of items within the pie chart can be removed from display in the pie chart by clicking on the table of colored blocks to the right. All number are recalculated when an item or items are X'ed out. The pie chart is for visual purposes and data collecting only. Removing an item from the pie chart has no effect on the function of the line.



View Plant Screen

What this screen is used for: Examining all current information of Blenders, Lines and materials.

The **View Plant** screen looks like this:



This screen is used for monitoring all activity within a plant including WSBs, lines and material usage as well as material cost per hour.

WSB monitoring is displayed in the upper table. Information displayed in this table is WSB **ID**, **Description** of WSB, **Recipe** currently running on that WSB, current **Operator**, current **Work Order**, the **Line** that the WSB is part of if applicable, **Throughput** per hour, Material **Usage** and **Cost**. Double clicking on ID, Description or Recipe will display the **View Blender** screen and more detailed information on that particular WSB.

Line monitoring is displayed in the middle table. Information displayed in this table is the **Line** name, the **Line Recipe** currently running on that line, the **Operator** of that line, the **Throughput** per hour of

that line, and the **Cost** of that line. Double clicking on **Line** name or the **Line Recipe** name will display the **View Line** screen and more detailed information on that particular Line.

Material monitoring is displayed in the lower table. Information displayed in this table is the **Material** name, total material **Usage**, material **Throughput** per hour, total **Cost** and **Cost** per hour of this material.

Advanced Inventory Management / AIMS

AIMS Overview - AIMS is a "Just in Time" material ordering system. Properly configured AIMS can help prevent down time due to lack of material by tracking material usage and notify the operator that material has reached levels low enough to require the material to be re-ordered. AIMS also has the ability to contact your suppliers and automatically place an order for a specific amount of the needed material.

This section is a brief explanation of how to configure and use the Advance Inventory Management System (AIMS).

Contents

Configuration

Configuring AIMS consists of changing system settings within the setup screen and material configurations within the material edit screen. Using the full potential of AIMS to contact suppliers when material levels need reordering requires that the G2 Server be connected to the Internet using TCP/IP and that you have an email account using a POP3 mail server.

System Configuration

System configuration requires changing the following fields in the Setup Screen. The fields in the setup screen that are used by AIMS include Identity, SMTP, SMTP Socket and AIMS Port.

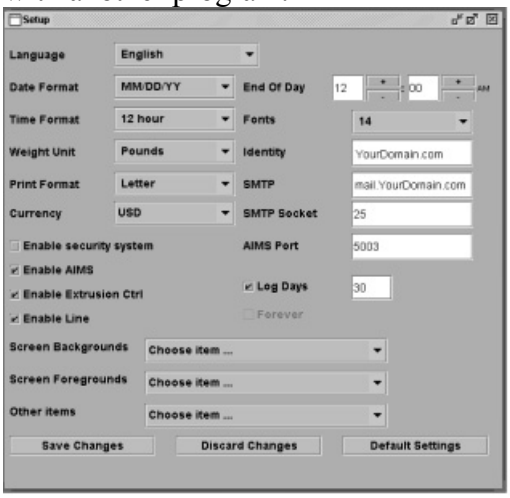
The following describes how each field is used by AIMS.

Identity - Identifies your organization (company name). This information will be used during the ordering process with your suppliers.

SMTP - This is the IP address of your email server. In most cases your Internet Service Provider or ISP also provides email with your dialup account. The information provided by your ISP will include an address for outgoing mail and may be labeled as "SMTP". This address is usually labeled as "smtp.yourprovider.com" or as a period separated number (i.e. 192.192.0.23). Enter this address into the SMTP field. If you do not know what your SMTP address is, please contact your Internet Service Provider.

SMTP Socket - SMTP Socket is the Mail Server's socket number. In most cases this number is 25 unless otherwise noted by your service provider.

AIMS Port - This is the AIMS transaction server port. This should be set to 5003 by default. This port number is configurable in the event that it is necessary to change the port number due to a conflict with another program.

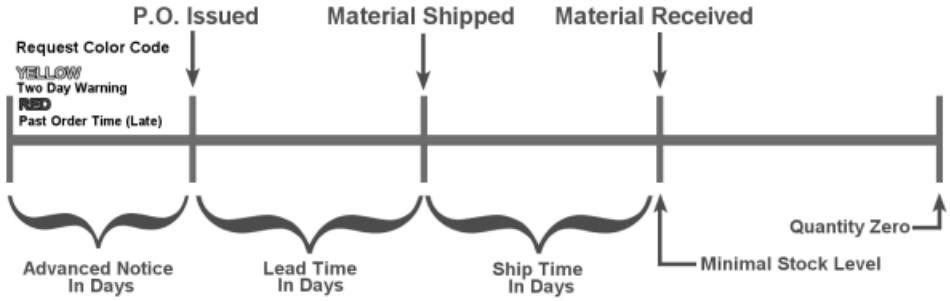


Material Configuration

Each material in the Material Database must be configured to work with AIMS. For more information on how to configure material to work with the Advance Inventory Management System see **Material Screen** on page 55.

Low Levels of Material

AIMS tracks material on hand. When the level of a material becomes low, it has been reduced down to a predetermined level. When the material level reaches the low level, the AIMS alarm is set off on the G2 Client and AIMS adds this material to the AIMS database. The material is also added to the AIMS screen in the Request column. Material in the request column is material that needs to be ordered. It's important to understand what is meant by "low." This section will define how AIMS determines when a material needs to be re-ordered. The time line graph will also help to understand how material-ordering time is calculated.



Time Line Graph

Term	Meaning
Lead Time	The time that expires between when an order is issued to when the supplier ships it
Ship Time	The time that expires between when an PO request is shipped by a supplier to when a customer receives it
Total Time	Lead Time + Ship Time
Minimal Stock Level	Minimal stock level of material in days. Based on average consumption rate per day.
Low	A material becomes low and should be ordered when material quantity on hand/Minimal Stock Level = Total Time + Minimal Stock Level

A material moves into the Request column in the AIMS screen when:

Quantity On Hand /Average Usage Rate <= Days Notice (Setup Screen) + low

Simplified that means a material enters the AIMS database when the Quantity on Hand reaches your Minimal Stock Level plus the amount of material that would be consumed during the reordering process. If you have AIMS set to inform you in advance (*Advanced Notice* in Setup) you will be informed those number of days ahead of time.

So, as you can see, the Lead and Ship days, Quantity on Hand, Min Stock Level, and Ave Usage Rate fields from the Material Edit screen are used by AIMS to trigger when a material is requested.

Late

A material can become late in several of the states through which it moves. This is all determined by the settings set for a material in the Material Edit screen.

When a P.O. is issued

The following describes the three late fields:

Acknowledge	Table cell turns yellow within this number of late days, red if later
Ship	Table cell turns yellow within this number of late days, red if later
Received	Table cell turns yellow within this number of late days, red if later

Supplier

Up to three suppliers who provide this material can be chosen for this material. When operators place an order, they can choose from this list.

Each material's ship and lead times are those of the supplier's from the supplier database. However, if

they differ, they can be changed.

Order Quantity

Normal order is used by default. The Best Order and Minimum Order are used only for references at the time of placing the order and may be selected then.

Using the Advanced Inventory Management System

AIMS Screen

The AIMS screen lists all materials that need to be ordered as well as the status of others that were ordered and are still in one of five states in the ordering process. In this example we will follow the progress of ABS through the AIMS ordering process.

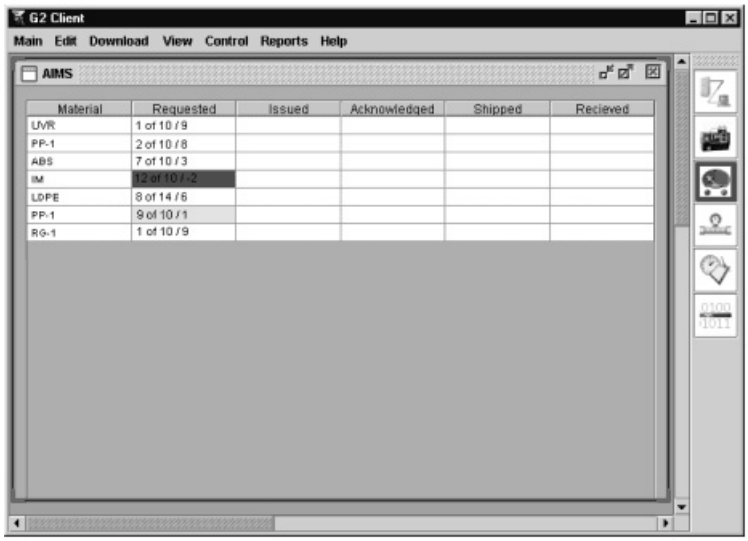


Image 5.0

States

There are five states that a material must go through in an ordering process. These five states are:

State	*Description*
Request	AIMS notifies operators that a material is approaching low (advanced Notice)
Issued	PO is issued
Acknowledge	PO acknowledged by supplier
Shipped	PO shipped by supplier
Received	PO received by customer

See image 5.0

1. Request

A material that needs to be ordered is added to the *Request* state and placed in the request column. The G2 Server does this automatically. If by chance, the quantity on hand should increase (more quantity is available and added), G2 will automatically remove the material from the *Request* column.

The Request column has 3 numbers representing 3 values in days.

The following describes the meaning of the values in the cells in the *Request* column.

x of y/z

x Number of days this material has been in the request state
y Number of days of *Advanced Notice* as specified in the Material Edit screen
z Number of days behind schedule (negative number) or number of days ahead of schedule (positive number).

An example might be: *1 of 5/4*

This example would mean that the material has been placed in the request column 1 day ago. 5 days is the number of days for your advanced notice with 4 days remaining to order material. If material is not ordered within 4 days, at the present consumption rate, assuming that the order and delivering process takes the amount of time as described by the material screen configuration, the material (PO) will not arrive in time to preserve the minimum stock level. If the material is exceedingly late, it's possible that the material will run out before the shipment of the material is received.

Two days before a material must be ordered, the *Request* cell will changed to yellow. After the order date, if material has not been ordered, the *Request* cell will change to red.

Clicking on a cell in the *Request* column will open an Order Panel window. See image 5.1.

In the order panel, the following fields default to the values configured by the Material Edit screen: Material, Quantity, Supplier, and Email. Except for the Material, all other default fields can be changed. This pop-up window allows operators to compose an email requesting the material, which is then sent to the supplier.

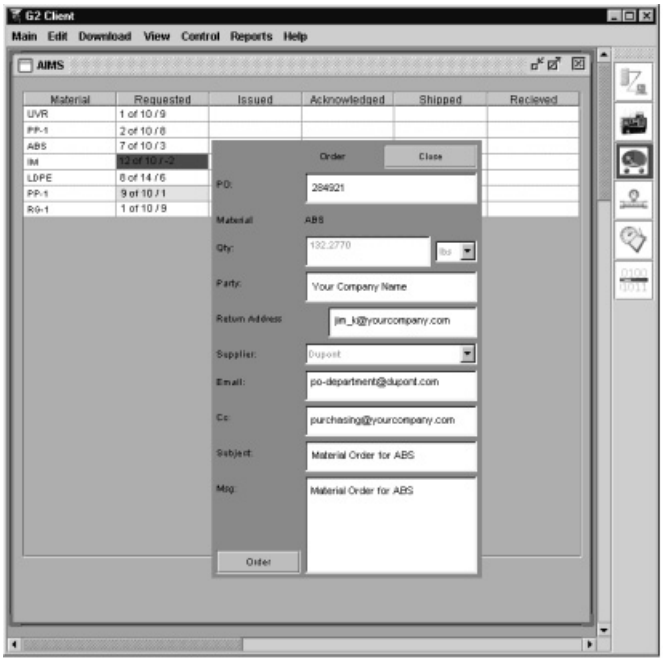


Image 5.1

The fields of the Request Pop-up windows (Image 5.1) are as follows:

P.O. - Purchase Order number assigned by your Company

Material - This is the material that you clicked on and should be ordered.
Qty - This amount is the default quantity of a normal order entered in material screen.
Party - Your Company name.
Return Address - Your return email address.
Supplier - One of up to 3 suppliers that have been entered for this material
E-mail - Your suppliers email address.
CC - Carbon Copy, Another recipients email address may be entered in addition to the suppliers email
Subject - The subject line of your email to the supplier
Msg - The message of the email

This window is used to place an order through an email to the default supplier or to one of your choice in the drop down menu. Filling in the fields and clicking order will send your supplier an email stating your request for material and the material will move to the *Issued* column.

2. Issued

Once a PO has been placed, the material moves into the *Issued* column.

Clicking on the cell will invoke a pop-up window that displays the PO information. This pop-up also provides manual acknowledgement.

Image 5.2

The following describes the meaning of the values in the cells in the *Issued* column.

x of y/z

x days in the state
y length of state = Lead Days (Material Edit screen)
z days delayed or days in advance

The following image displays a typical email message that was sent by the G2 server, and received by the supplier. If the supplier has a web browser, simply clicking on the link will invoke a web page that allows the supplier to acknowledge the PO has been received.

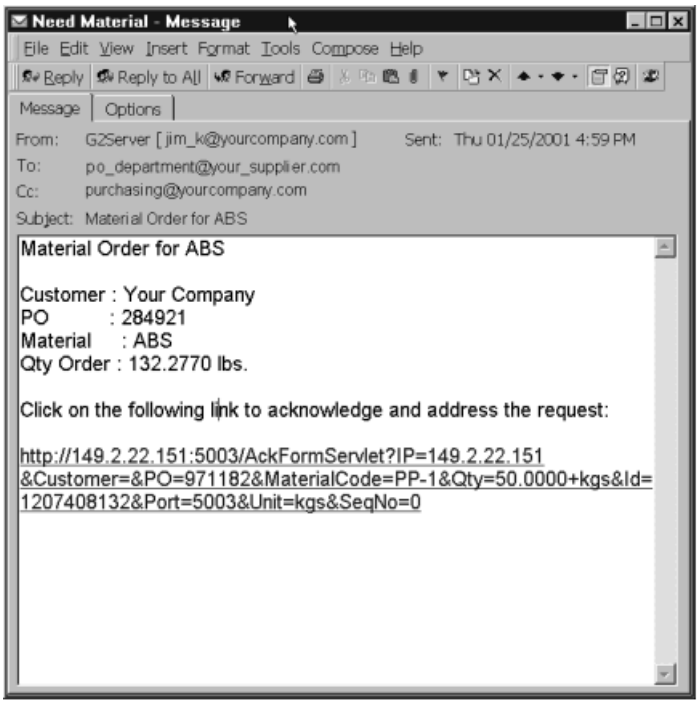


Image 5.3

The following web page appears by clicking on the link. It provides the supplier the ability to acknowledge the PO request, enter a projected ship date, and include brief comments.

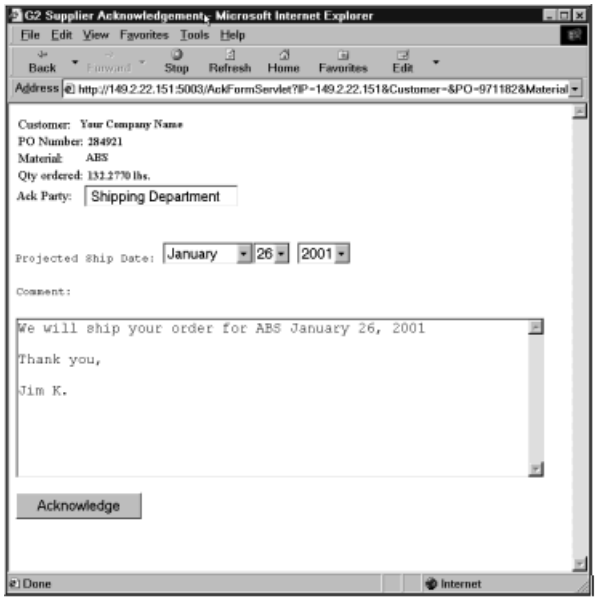


Image 5.4

Submitting this form will move the material to the next state.

3. Acknowledge

After a supplier acknowledges a PO request, that material moves to the *Acknowledge* state.

The following describes the meaning of the values in the cells in the *Acknowledge* column.

x of y/z

x Number of days in the state
y Length of state = Lead Days (Material Edit)
z Days delayed or days in advance (positive number is advanced, negative number is delayed)

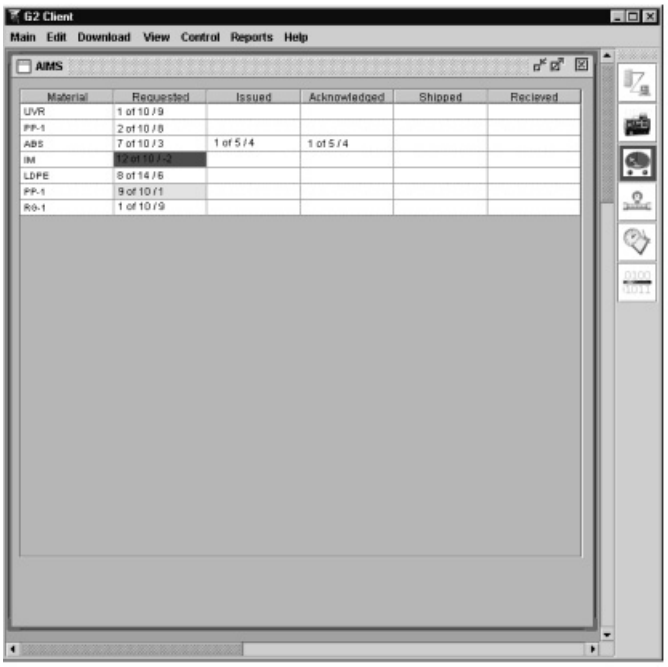


Image 5.5

Clicking on a cell in the *Acknowledge* invokes a pop-up window that displays the acknowledge information *(see image 5.6)*. Also, it allows manually acknowledging that a material has been shipped (This is useful, if a supplier calls to let the customer know that the PO has been shipped).

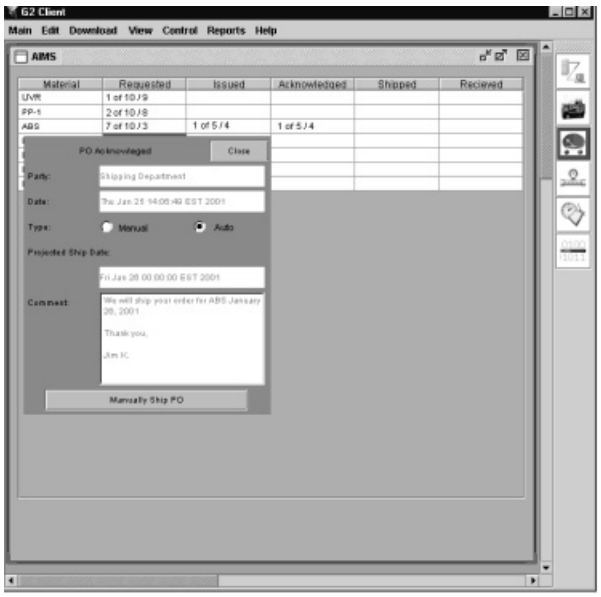


Image 5.6

On the projected ship date, the G2 server will again email the supplier to verify that the PO has been sent. The supplier can acknowledge that the PO has been sent via the web page accessed by the hyperlink in the email. *(see images 5.7 and 5.8)*

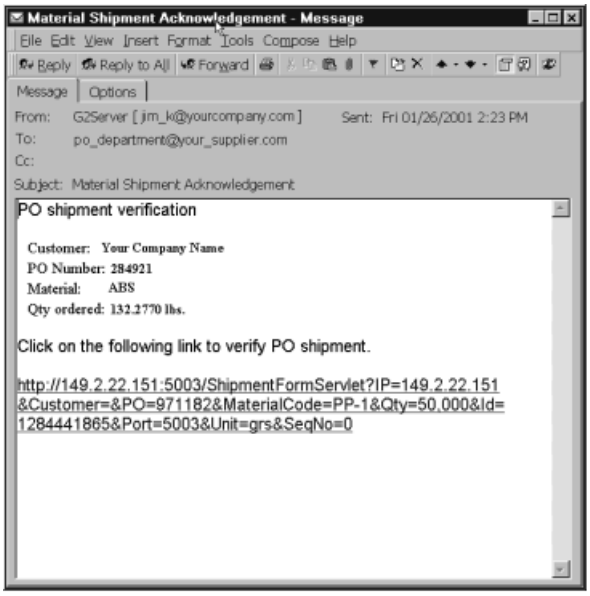


Image 5.7

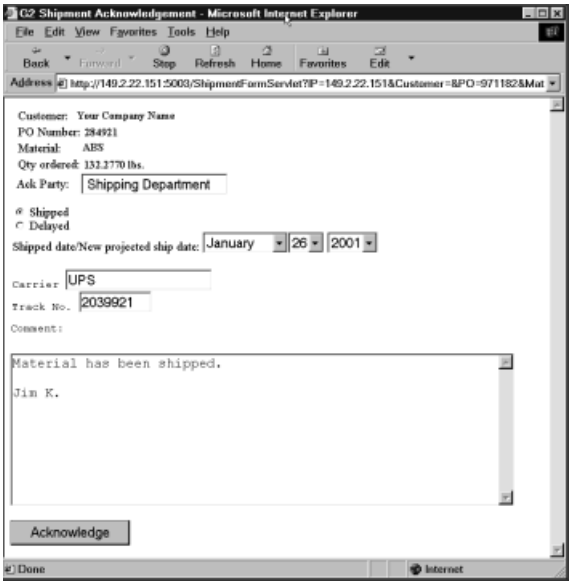


Image 5.8

The web page prompts the supplier for information. After the supplier enters this information, the web page can then be submitted. This moves the material to the next state.

4. Shipped
After the supplier has shipped a material, the material moves into the *Shipped* state.

Image 5.9

The following describes the meaning of the values in the cells in the *Shipped* column.

x of y/z

x days in the state
y length of state = Material Edit.Ship Days
z days delayed

Clicking on a cell in the *Shipped* column, invokes a pop-up window that displays shipment information *(see image 5.9)*. It also provides a button that will invoke the *Receive Screen (see image 5.11*.

After receiving the shipment, the material information can be added to the G2 server via the *Receive Screen (see image 5.11 and 5.12)*. This will move the material to the last stage.

5. Receive

This is the last stage. The material will be in this state for 2 weeks. After this time, it will be purged from the AIMS database and moved to the AIMS History database. The following describes the meaning of the values in the cells in the *Issued* column. By clicking on the *receive* column cells information on that shipment can be viewed. Right-clicking a material in the received column will invoke a pop-up menu, which can be used to manually move the material to the AIMS history database.

x of y

x days in the state
y length of state = Lead Days (Material Edit screen)

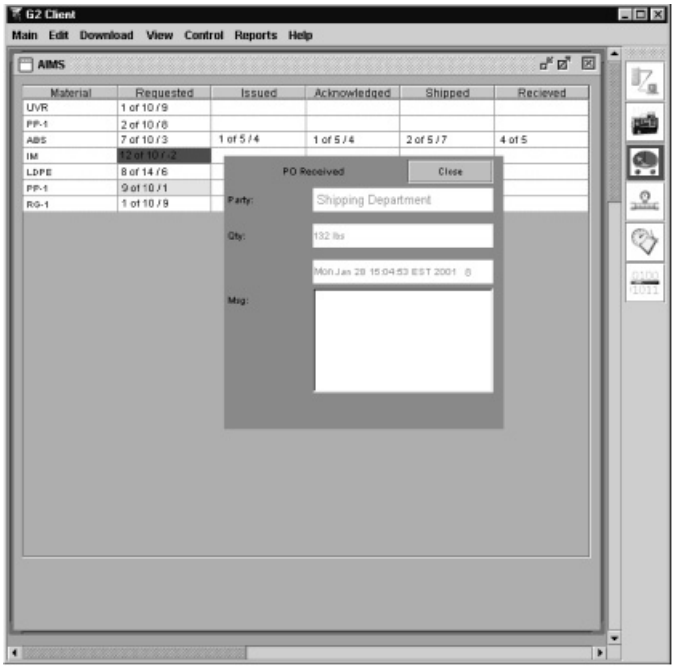


Image 5.10

Image 5.11

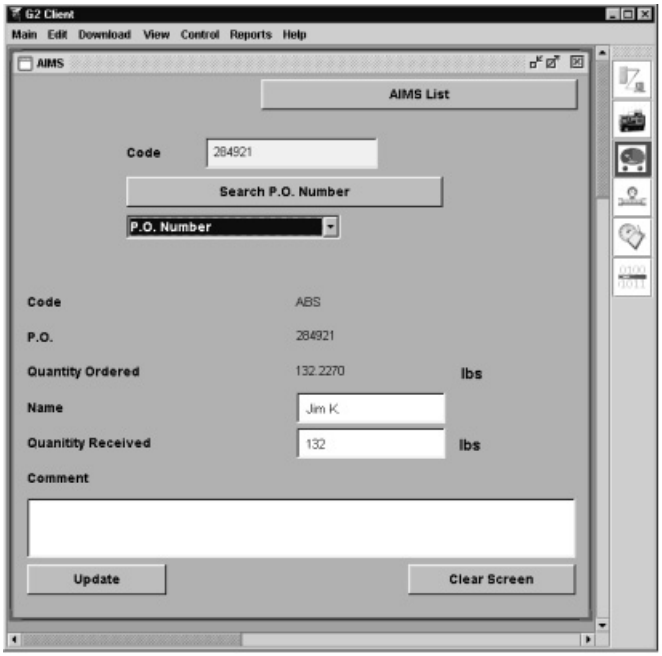


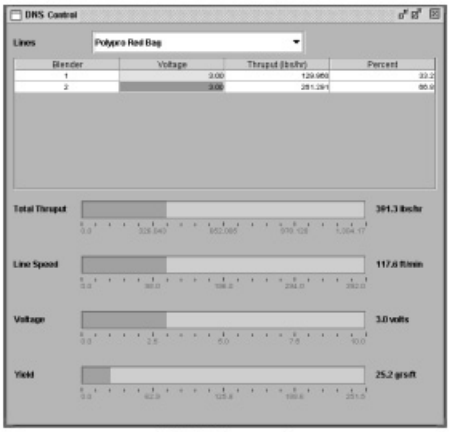
Image 5.12

DNS Control - Downstream Control

What this screen is used for: The Downstream (DNS) Control screen is used to control a line that is set up for downstream control.

To use the DNS Control screen to control a line, select a line from the drop down menu. The user will enter a voltage by clicking on the voltage field of a particular WSB. Voltage may be entered for each WSB in the table at the top of the DNS control screen. If starting up manually, enter the current voltage value from your interface box. *See image 2.* The voltage control below is always enabled allowing the

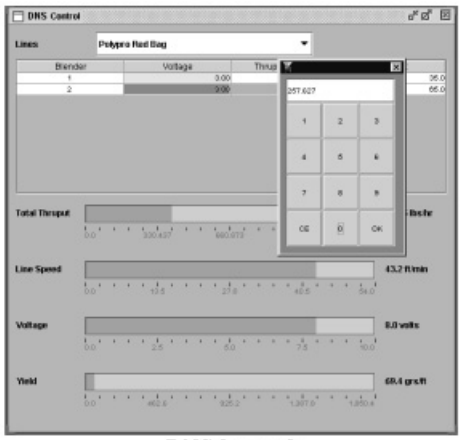
user to adjust line speed through use of the voltage control in the lower half of the DNS Control Screen. To adjust this voltage, click the voltage status bar.



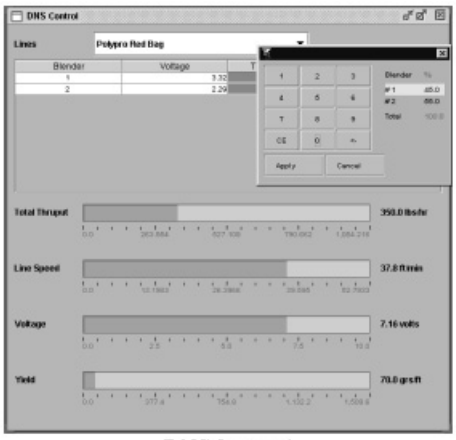
DNS Image 1

DNS Image 2

When the voltage cell color in the table has turned from yellow to green this indicates that the blender has learned the steady rate. Throughput can then be locked. This is done by clicking in the throughput cell to the right of the green voltage cell. *See image 3.* Throughput may be adjusted and then locked by clicking ok in the popup keypad. When the Throughput cell turns green this indicates that the blender is holding throughput by adjusting the voltage. After all blenders have a locked throughput, further refinement of the percentages of the line may be adjusted by clicking on the Percent cell to the right of the green throughput cell for each blender. *See DNS image 4.* When all blenders are in throughput mode, control over downstream is enabled. These controls are located in the lower half of the DNS Control screen. They include control over Total throughput, Line Speed, Voltage and Yield. To adjust these settings, click on the voltage status bar to display the pop-up keypad.

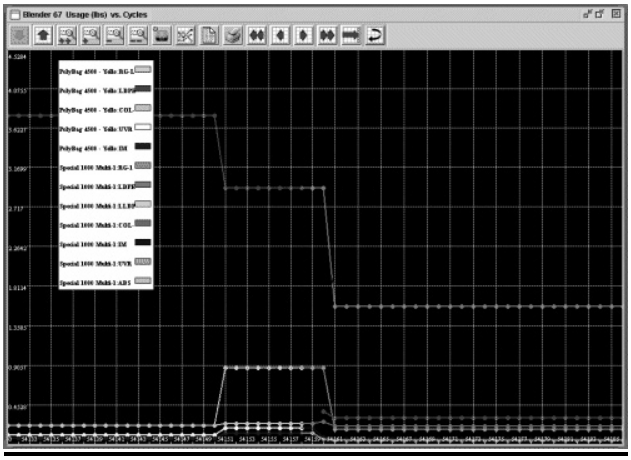


DNS Image 3



DNS Image 4

Trend



<u>Purpose of Trend</u>: Trend is used for historical viewing, real-time monitoring and reporting of Cycle-by-Cycle information on one or more blenders in a graphical format.

The Cycle-by-Cycle component information displayed on the Trend graph can be configured in several different formats. Along the Y-axis of the graph, components can be configured to display as *percent of mix*, *throughput*, *usage* or *variance*. Along the X-axis, component information can be configured to display as *cycles*, *time in minutes*, *time in hours*, or *time in days*.

Each component is displayed as a line on the graph marked by points of data. Each component is also displayed within a white Data Table. The data table displays the recipe name, material code and color as displayed on the Trend graph for every material within the displayed X-axis. The Data Table can be moved within the Trend graph by clicking and dragging the table.

Graph Controls – Graph controls are located across the top of the Trend screen. These controls allow the user to navigate through the Trend information as well as acknowledge Trend alarms and printing graph information and Trend reports.

	**Scale Down**	Moves the graph down the Y-Axis in the increments displayed on the graph vertically.
	**Scale Up**	Moves the graph up the Y-Axis in the increments displayed on the graph vertically.
	**Zoom In By 5**	Zooms in on the Trend graph by a factor of 5 towards the center unless the graph is in Trend Live Mode, in which case it will zoom in towards the right-most leading edge.
	**Zoom In By 2**	Zooms in on the Trend graph by a factor of 2 towards the center unless the graph is in Trend Live Mode, in which case it will zoom in towards the right-most leading edge.
	**Zoom Out By 2**	Zooms out from the Trend graph by a factor of 2 from the center unless the graph is in Trend Live Mode, in which case it will zoom out from the right-most leading edge.
	**Zoom Out By 5**	Zooms out from the Trend graph by a factor of 5 from the center unless the graph is in Trend Live Mode, in which case it will zoom out from the right-most leading edge.

<table>
<tr><td>  </td><td>Silence Alarm</td><td colspan="2">Silence Alarm in Trend is used only when a maximum and minimum threshold is set for one or more components. When the max.or min. is set in the Data Table's control window and a component goes above or below these thresholds, the Trend Alarm is displayed as:</td></tr>
<tr><td></td><td></td><td>  </td><td>Component Alarming – When the component alarms, the Alarm button will blink while an audible alarm with sound at the G2 Client computer (if the computer is equipped with a sound card and speakers). In addition to the Alarm button, the Component Table will display the component(s) that are alarming in Red text. Alarms can be acknowledged by right-clicking the component alarming in the Data Table and clicking the alarm icon or resetting the thresold.</td></tr>
<tr><td></td><td></td><td>  </td><td>Component(s) Alarming, Alarm Silenced – When the Alarm button is clicked, the Audible Alarm is silenced until the next record is logged in Trend. If the component is still beyond the threshold when the next record is logged in Trend the Alarm with be reinstated.

To correct or acknowledge the component(s) that are alarming, refer to the Data Table Controls overview in this section.</td></tr>
<tr><td>  </td><td>Trend Points</td><td colspan="2">Toggling this Trend setting will display or not display intersecting points on the Trend graph.</td></tr>
<tr><td>  </td><td>Cycle Report</td><td colspan="2">Generates a Cycle-By-Cycle report based on the currently displayed blender.</td></tr>
<tr><td>  </td><td>Print</td><td colspan="2">Print the currently displayed Trend graph.</td></tr>
<tr><td>  </td><td>Page Left</td><td colspan="2">Moves the Trend graph to the left, one page per click.</td></tr>
<tr><td>  </td><td>Scroll Left</td><td colspan="2">Moves the Trend graph to the left, one record per click.</td></tr>
<tr><td>  </td><td>Scroll Right</td><td colspan="2">Moves the Trend graph to the right, one record per click.</td></tr>
<tr><td>  </td><td>Page Right</td><td colspan="2">Moves the Trend graph to the right, one page per click.</td></tr>
<tr><td>  </td><td>Trend Live</td><td colspan="2">Moves the Trend graph to live mode.</td></tr>
<tr><td>  </td><td>Original View</td><td colspan="2">Restores the previously displayed view of the Trend graph.</td></tr>
<tr><td colspan="4">Target Zoom Feature – The Target Zoom Feature is designed to allow a selectable area of the Trend graph to be zoomed in on by highlighting an area using the mouse cursor. To select an area, click on the Trend graph using your mouse cursor, then drag the mouse diagonally across the graph and release the mouse (which doing this, a square box will be drawn across the graph). The area within the mouse two points on the graph will be zoomed in on. The selected area must contain at least 3 records along the x-axis and you can not draw a selected area outside of the Trend graph. To revert back to the original view, click the Original View graph control button.</td></tr>
</table>

Control Windows – When viewing a Trend graph, use your mouse and right-click on the background of the graph. A menu with the following choices will be displayed: Blender,

Y-AXIS, X-AXIS, Trend Period, Colors, Materials, Grid, and Records. These choices are explained below.

Blender – Displays a control box where the user may change the current Trend Screen to the Blender specified in the dropdown menu. Only blenders added to the Blender Edit screen are displayed.

Y-Axis – The Y-Axis is what type of information Trend will display in the graph over Time or Cycles (x-axis). Choices are **% of Mix**, **Throughput**, **Usage** and **Variance %**. A High Range and Low Range may be specified and will be indicated vertically along the left side of the Trend graph. By default **Dynamic Range** is selected which will display a high and low range that encompasses all data along the y-axis.

X-Axis - The X-Axis is the breakdown increments along the graph horizontally Choices are **Time (**in minutes, hours or days) or **Cycles**. The range across the graph may be specified and will be indicated horizontally along the bottom of the Trend graph.

Trend Period – This control box allows the user to specify the Start Date and Time and a Stop Date and Time that the Trend Graph will display.

Colors – Allows the user to change the Trend Graph colors for the background and the dotted grid lines.

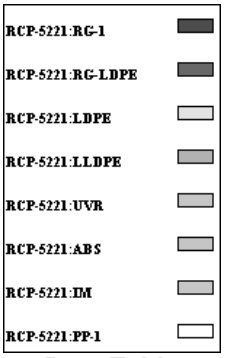
Materials – Materials is a Checkbox that will either display or not display the Material information box.

Grid – Grid is a Checkbox that will either display or not display the dotted grid lines.

Records – Records is a Checkbox that will either display or not display the intersecting points of information on the graph. The **Trend Points** button in the Graph Controls bar at the top of the Trend screen also toggles the points.

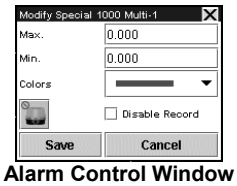
Data Table Controls

By Default, the Trend Data Table is display on the Trend Graph. This table of information will display the all of the visible recipes within the X-axis of the Trend graph.



Data Table

When a material within the Data Table is right-clicked, an *Alarm Control Window* is displayed. This control window allows the user to specify a maximum (Max.) and a minimum (Min.) threshold for that material. On the Trend graph, a dotted line will appear at the location of the *Max* and a dotted line will appear for the *Min*. When the material's *percent of mix*, *throughput*, *usage* or *variance* goes above Max or below Min, an audible alarm will sound at the G2 Client computer. If the Alarm sounds, Trend's *Silence Alarm* icon in the Graph Controls will appear as alarming. Clicking the *Silence Alarm* icon will silence the alarm but not disable the alarm or correct the reason for the alarm. To acknowledge the alarm or change the alarm threshold, in the Data Table, right-click the component that is alarming.



Alarm Control Window

Other feature controls in the Data Table's Alarm Control Window are color changes to the component in the Trend graph and disable record, which will hide the record in the Trend graph. When hidden, Trend still records data.

Trend Reporting

The Cycle Report

ID: 067	Time: 11/06/2003 16:16:19		Cycle: 55293		Cycle Time: 124.62		Batch Total: 1999.6 grams					
Component:	1	2	3	4	5	6	7	8	9	10	11	12
Total (grams):	80.0	721.9	902.3	97.4	32.4	24.3	141.3	0.0	0.0	0.0	0.0	0.0
Percent of Batch:	4	36.102	45.124	4.871	1.62	1.215	7.066	0	0	0	0	0
Setting:	4	40	50	6	2	1.5	8.7	0	0	0	0	0
Variance % (%):	0.02	0.005	-0.004	-0.053	-0.259	-0.259	-0.004	0	0	0	0	0

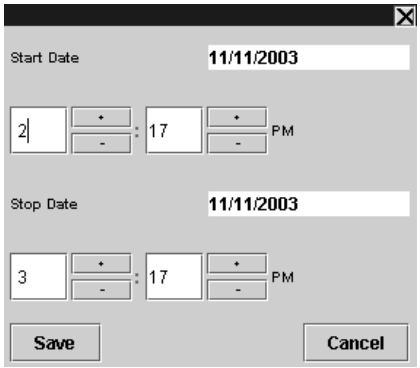
A cycle report displays a table of information for each cycle. Each table contains general information about the cycle and specific information about each component. General cycle information includes: Blender ID, date and time of the cycle, cycle count, elapsed cycle time and total for the batch in grams. Specific component information includes: component in the blender by hopper number (1 thru 12), total material processed per component in grams, percent of the batch for each component (including or not including regrind), the setting of each component during the cycle, +/- variance by percent for each component.

By default the cycle report displays in landscape due to the width of a cycle table. Depending on the margins specified within Setup, each page of a report will display up to 4 cycle tables. For best results, reduce the margins in setup to .25 in / 0.64 cm and use a small font.

How cycle reports are built

Trend's primary objective is to retrieve cycle-by-cycle information from each blender. This information is collected at every cycle and recorded into the CBC database for viewing or generating reports. Trend reports are generated based on the cycle information buffered in the Trend graph. As cycles occur, these cycles are added to the buffer. When in live mode, a cycle report will report on more cycle information than what is displayed in the graph. To reduce the number of cycles in a report or to specify a date/time range of a cycle report, a limited report must be displayed by specifying your time / date range or the range of cycles in your x-axis.

Limiting the information displayed in cycle reports



1. Right-clicking the background of the Trend graph, and select **Trend period**.

2. Enter a Start Date and Time, and a Stop Date and Time and click **Save**.

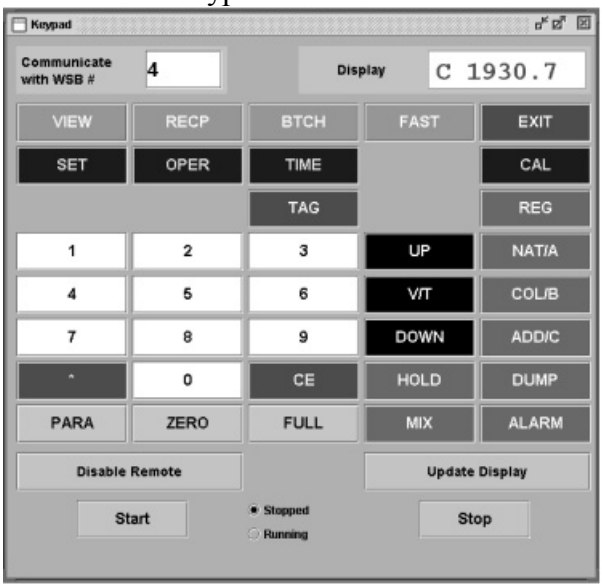
Generate a Cycle Report by clicking the Cycle Report icon in the Graph Controls.

A Cycle Report is then generated and displayed. The report can then be sent to the printer or saved as a file.

Remote Keypad

What this screen is used for: This screen is used for accessing information, parameters and settings within the blenders. Most blender functions are accessible through the keypad however knowledge of the blender is critical for viewing and changing information within the blender through the keypad.

The Remote Keypad Screen looks like this:

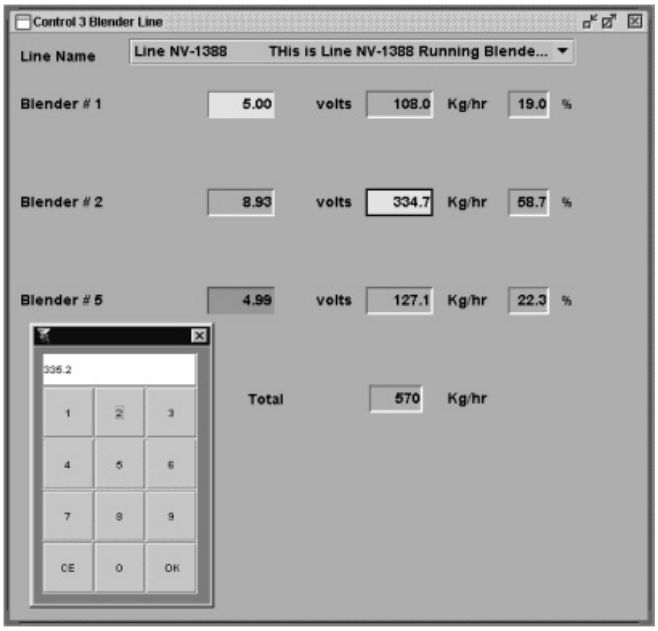


The Remote Keypad screen is used to control and adjust individual WSBs from the G2 Client screen in much the same manner as an operator would control and adjust the WSB directly from the keypad located directly on the WSB itself. Before using the keypad whether you are using the Remote Keypad or the keypad directly on the WSB, you must first understand how to correctly use the keypad functions. For more information on how to use the keypad to control the WSB controller, read the manual that came with your WSB. Manuals are available online at www.maguire.com and by request in booklet form or on CD-ROM which cover the WSB controller functions. These manuals are, "Weigh Scale Blender with 4 Software", **"**Weigh Scale Blender with 4 Software Tutorial"**,** "Weigh Scale Blender with 12 Software" and **"**Weigh Scale Blender with 12 Software Tutorial". To use the Remote Keypad enter the I.D. of the WSB that you want to access remotely and click Enable Remote. When the Remote Keypad is enables in the G2 Client, the Keypad on the WSB that is being access is disabled at the controller to prevent the possibility of a conflict at both locations. Also when the Keypad is enabled from the G2 screen, a SoftStop command is sent to the blender to stop it. When communication has been established with the WSB, the keypad will be enabled and you may click keys using the mouse. Keys will remain grayed out while the keypad is attempting to communicate with the WSB. When the keystroke is sent to the WSB, the display will update and the previously pressed key will revert to a normal state. At that point you may press the next key. The Update Display button will update the display as it is currently displayed on the WSB. Also the user can send a Softstop command to the WSB through use of the Start and Stop buttons at the bottom. Radio buttons located in between the Start and Stop buttons indicate the current state of the WSB. When the G2 user is has completed use of the G2 Keypad screen, clicking the Disable Remote button will re-enable the keypad location on the WSB controller.

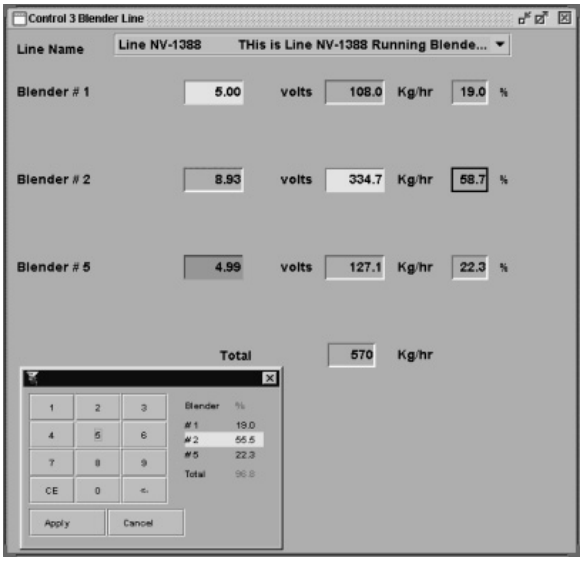
Line Control Screen

What this screen is used for: Controlling a line of grouped blenders by voltage, throughput, or percentage.

The Line Control Screen looks like this:



The Line Control screen is used to control and adjust and lock the voltage, throughput per hour and percentages of each extruder in the line. When choosing a from Control in the main menu you must choose the control screen that will view the correct number of WSBs that are in the line you want to control. For example, if the line you want to control has 3 blenders you must choose the selection "3 Blender Line". Then select the line from the drop down menu in the Control screen. Each blender's voltage will be displayed. Placing your mouse over the voltage and using the popup keypad can adjust the voltage. To change the number first clear the keypad screen, then enter the voltage for that blender and click OK. The blender will display its voltage in a colored state. Yellow means the blender is trying to determine its rate at that voltage.

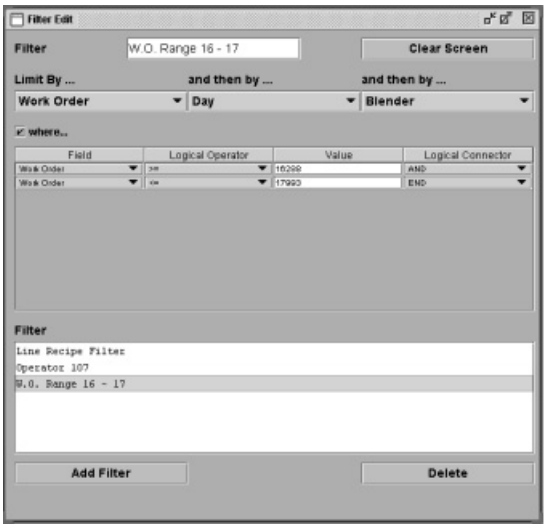


After the blender has run several cycles and has learned its throughput rate per hour the voltage display will turn green. Green means it has learned its throughput, which will be reflected on the display of the blender as a "T". Once a blender has learned its throughput, the throughput can now be targeted. By placing your cursor over the throughput numbers of a blender that has learned it rate, a target throughput can be entered. The throughput numbers display will be in yellow until the targeted throughput matches the actual throughput. When all blenders in the line have learned their rate total throughput and percentages can also be targeted.

Report Filter Edit

What this screen is used for: This screen is for creating and saving simple to complex report filters for later use in the Material Usage Report screen.

The **Report Filter Edit** screen looks like this:



Filter Edit – This screen is for creating pre-defined filters, which may be saved for later use when generating reports in the Material Usage screen. When using a filter in the Material Usage screen, the filter may be adjusted without changing the original filter saved in the filter database. Simply, 3 stage filters may be created as well as more complex filters using logical operations.

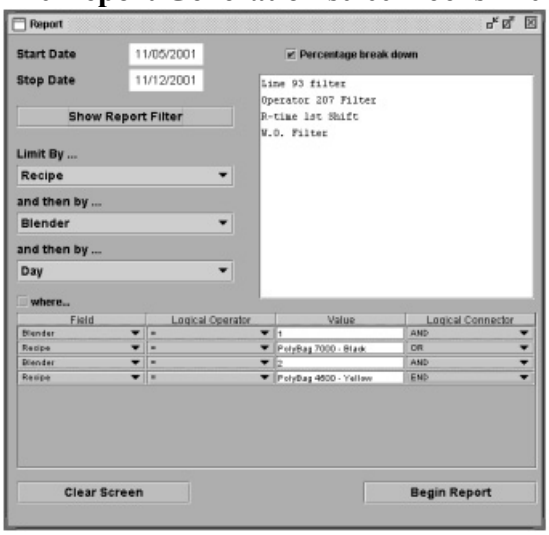
Creating Filters

- To create a filter, type a name for the filter.
- Then select what you want to limit your report by from the three drop-down menus.
- For greater refinement on a report, use the logical operations by checking off the “where” checkbox. Select from the drop-down menus Field, Logical Operator, enter a Value and the Logical Connector for each logical filter.
- For more information on how to use the logical operations, see, **How to use the “Where” feature,** in the next section, Material Usage Reporting.

Material Usage Reports

What this screen is used for: Generating Material Usage reports from the data collected from the blenders.

The **Report Generation** screen looks like this:



This screen is where you generate material usage reports. All material usage reports are based upon the data collected by the G2 Server. The G2 Server, when running, is constantly collecting data. This data is then used to produce all of the reports. The reports are limited to information that can be derived from this data.

G2 produces material usage reports showing separate totals for all materials blended between two dates broken down by date, time period, machine number, line, recipe, line recipe, work order, operator number, and "end of day" tag. All reports may be limited to certain a date range and then broken down by each category. Further limiting of reports may be used in the advanced reports by building mathematical "and" and "or" statements.

OUTPUT DEVICE: Reports will be generated to a separate satellite window. Printing from this window will allow the user to choose a printer or send the report to a file. This window will give the user the option of choosing the report to be in pounds, ounces, kilograms, or grams.

Start Date / Stop Date: All material usage reports request a start date and stop date. To enter dates click on the start and stop dates. A calendar will appear and using the arrows you the user can change the date. Formats are specified in the setup screen, such as MM/DD/YY. All reports are limited to information between and including these two dates.

Percentage Breakdown: When percentage breakdown is checked, reports will display a percentage column as well as totals.

Limiting Reports: When limiting a report, begin with the upper dropdown of limiting parameters and moving down the user may further limit a report. If you want to build a report and limit it to specific values such as blender and operator you must specify these limiting parameters in the dropdown menus. Selecting Retrieval Times as a limiting parameter in the dropdown menus will display all available retrieval times in a table. Retrieval times may be selected individually for further breakdown.

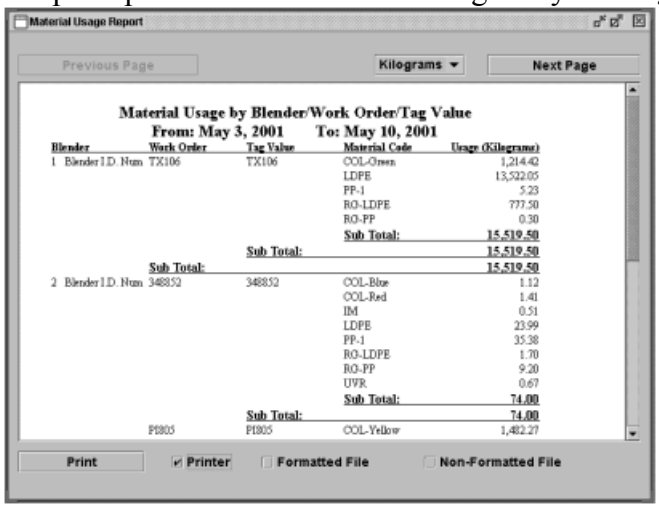
Additional advanced control over reports generating may be attained by checking off the "where…" checkbox. This will display very flexible and powerful report generating operations. Your choices in the advanced reports are based on what is selected above under the "Limit By" rules. For instance, if you limit the report by "Work Order" and then by "Blender", you choices in the advanced report under field will be "Work Order" and "Blender". By using the Report Filter Screen, report limiting filters may be created and saved for repeated use. These filters may be viewed by clicking the "Show Report Filter" button and selecting a pre-defined filter from the report filter list.

How to use the "Where" feature

To use the advanced report building operations, you must first understand how to correctly read and build an advanced report. Under the Advanced Reports (where…) are four columns labeled *Field*, *Logical Operation*, *Value* and *Logical Connector*. When building an advanced report, start in the left column, *Field*, and select what your first report statement will pertain to. Your choices may be one or more of the following; *Blender*, *Line*, *Recipe*, *Line Recipe*, *Work Order*, *Operator* or *Retrieval Time*. After making your selection for the first statement move to the next column labeled "*Logical Operator*". Logical Operator's choices consist of > (greater than), >= (greater than or equal to), = (equal to), <= (less than or equal to), and < (less than). These logical operators are used to target a specific selection from the first column by using the = *(equals)* logical operator or to target a range by using the > (*greater than)* and < (*less than)* operators as well as the <= and >= to include the targeted value. The next column, *Value*, contains a field to enter a value. Your value will depend on what you selected in column one, *Field*. For instance, if you selected Blender in column one (*Field*), you will enter a blender I.D. If you selected Work Order, enter a work order number exactly as it was entered into the G2 database. The value for a Retrieval Time is entered as a 24-hour format (i.e. 17:00 for 5 pm). Other values such as the name of a *Recipe*, *Line*, *Line Recipe* and *Operator* must be entered the same as it is entered into the G2 Database. Only values for Retrieval Time, Blender, and Work Order will work with Logical Operators of > (greater than), >= (greater than or equal to), <= (less than or equal to), and < (less than). Values for all Fields will work with the = (equals) Logical Operator.

The last column is the "*Logical Connector*". All statements will use the "*Logical Connector"* either to finish the report query or to continue to build the report query. "*Logical Connector"* consists of "END, "AND", "OR". Selecting END will finish the statement and you will be ready to click "Begin Report". If you want to continue to narrow your report by adding another line you can select "OR", or "AND". The *Logical Connectors* "AND" and "OR" derive their meaning in mathematical statements and to properly use them you must be familiar with what they mean. As in the example screenshot above, a blender is connected to a recipe using the "AND" *Logical Connector.* The AND *Logical Connector* means that the reports query MUST be this AND this. In the example above it would read this reports query MUST be Blender 1 AND Recipe PolyBag 7000 – Black. The AND *Logical Connector* can be used several times to narrow your report. The OR *Logical Connector* connects additional queries. So in the example above, the additional query is Blender 2 AND Recipe PolyBag 4500- Yellow.

Sample report based on Material Usage only in kilograms (output to window)



Printing Reports

To print a generated report, click the Print button. To print to a flat file, select Formatted or Non-Formatted File. A formatted file contains the header information including the data/time range. A Non-Formatted file does not contain the header information.

Opening a Report in Excel
A Formatted or Non-Formatted file can be opened in Excel. To do this, start by saving a report as a Formatted or Non-Formatted file without typing an extension to the file name. An example would be a file called "*report*" but **NOT** "*report.xls*" or *"report.txt"*.

Open Excel and open the file by browsing your computer to the location where you saved the file. When browsing for the file, change "Files of type:" to All Files (*.*). Locate and double-click your report file.

You should be presented with a Text Import Wizard. The type of file is **Fixed Width**. Choose the row you want to start at (you may want to skip the header title of the report), and File origin is Windows (ANSI), Click Next .

Using the Data preview, move the vertical column lines to determine where your columns begin. If a vertical line must be added or removed, double-click to create or remove one. Click Next.

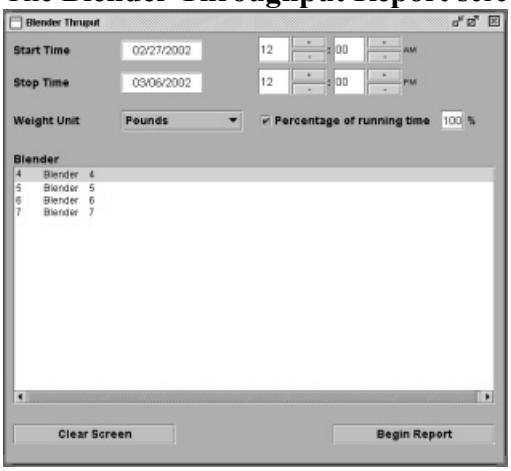
You may further specify the column data format if desired. Click finished.

Blender Throughput Reports

What this screen is used for: The Blender Throughput Report screen is used to generate reports based on average throughput, total throughput and the percentage of total uptime of a particular blender or multiple blenders. Reports are based a start/stop date and time, weight units and percentage of running time. Only currently active blenders are displayed on the Blender Throughput screen. To select multiple blenders, hold the Ctrl key down while selecting blenders. Selecting Percentage of running time allows the user to enter the total percentage of time that the blender is actually running during the report's start and stop range. This percentage would be based on the typical daily running time of the blender. For example, if a blender is used for a single 8 hours shift each day, the percentage of running

time would be 33% (8 hours out of every 24 hours). If the blender is running 24 hours a day, 7 days a week, the percentage of running time would be 100%.

The **Blender Throughput Report** screen looks like this:



An example report output is pictured below. Reports may them be printed.

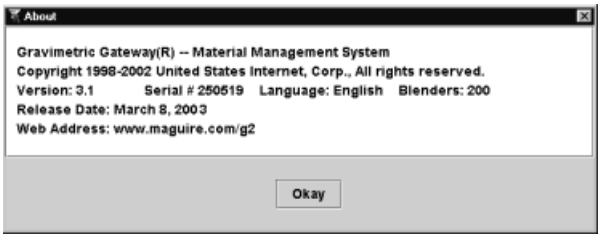
Inventory Reports

What this screen is used for: The Inventory screen is used for analyzing the current or historical inventory levels of one or more materials. These levels are based from the Material Edit screen's Quantity on Hand and the quantity on hand database. As material is consumed the quantity on hand amount is reduced. Likewise, when material quantity is added in the Material Edit screen these changes are stored in the quantity on hand database and can be viewed through the Inventory screen. The Inventory screen is used to display one or more materials and their respective Quantity on hand and/or a historical level change based on the start and stop date. To select multiple materials, hold the Ctrl key down while selecting additional materials to display.

Help

The Help menu contains About and Reinitialize.

The **About** box will look like this:



The about box displays information about the program. It displays the name of the client software, copyright information, the version number, Serial Number of your signal amplifier, the current language of the G2 installation, number of licensed WSBs, the release date of the G2 software version and the Maguire web address. If you have any questions pertaining to the client software you will need to know your version number.

Reinitialize is used to reset the client interface.

Yield Control

Introduced in G2 version 3.1 (not available in G2 3.0.x versions or earlier), Yield Control offers to the operator, the ability to control Co-Extrusion Lines consisting of 1 to 7 extruders while intelligently controlling the downstream Take-Off equipment.

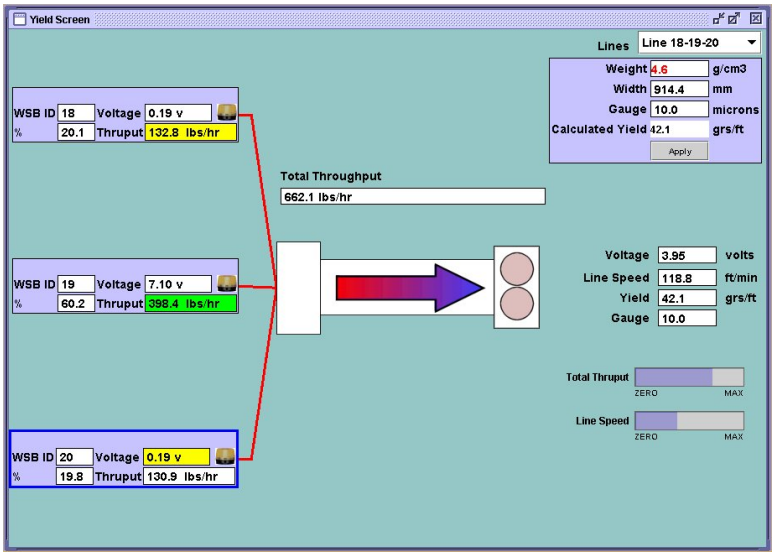
Setup Requirements
Before the Co-Extrusion process can be used in G2, the following requirements must be met. Steps 2 through 6 are outlined in the Quick Start Guide. For information on YDLX (single extruder), YDLT (single extruder), or DNS (co-extruders), refer to your Blender Manual.

1. All Blenders must have the ***02** function set to **EXT CRTL, YLDX, YLDT,** or **DNS**. See your blender manual for addition information on these parameter values and their function.

2. IN a Co-Extrusion setup, one blender must have the ***02** function set to **DNS**. All blenders must be set to **EXT CRTL.** The blender set to **DNS** must have the CPL parameter set. *See Extrusion Control Supplement for further information on CPL.*
3. All Blenders within the Co-Extrusion process must have an I.D. set using the ***66** function.
4. All Blenders within the Co-Extrusion process must be added to the **Blender Edit** screen.
5. All blenders must have a State of **On Line** in the Blender Edit screen.
6. All Materials needed to build the recipes for the Co-Extrusion blenders must be entered into the G2 database using the **Material Edit** screen.
7. **Blender Recipes** that the Extruders will be running must be built from the **Materials** and then added to the Recipe Database.
8. A **Line** must be created using the **Blenders** that are part of the Co-Extrusion process.
9. A **Line Recipe** must be built using the **Blender Recipes**.
10. The **Line Recipe** must be downloaded to the **Line** using the **Download Line Recipe** Screen.

After following the above steps, you are now ready to begin using the Yield screen to control the extruder(s) and the downstream equipment.

Yield Screen



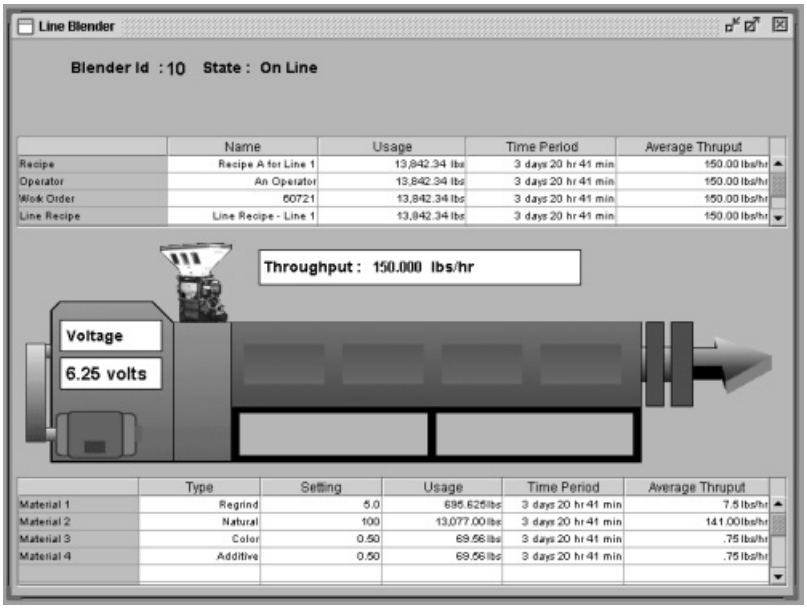
The Yield Screen represents your equipment. In the left side of the screen are information tables, one for each extruder's blender controller. Depending on the number of blenders you are using 1 to 7 tables will be displayed. Each table consists of the blender ID number, the calculated specific gravity of the material passing through the blender, the current voltage, the DNS %, the current throughput, and an alarm indicator. Clicking on the Blender ID field will bring up a screen where you can further examine the line.

All lines will visually merge where your Total Throughput will be displayed.

At the right are your take-off or downstream controls. Displayed are **Line Speed**, **Voltage** and the calculated **Yield** in weight per length. Also below the take-off information is a visual indicator of your current take-off information.

Line Blender Screen

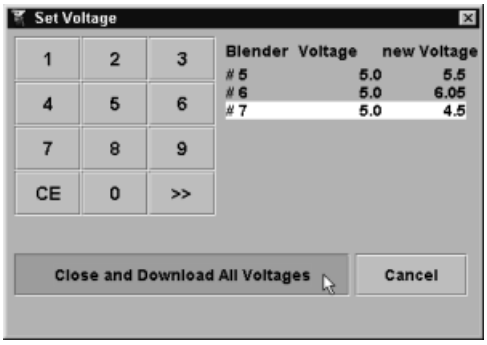
A more detailed examination of each blenders settings and output can be accessed through the Line Blender Screen. The Line Blender Screen is accessible through the Yield Screen by clicking any of the WSB ID fields.



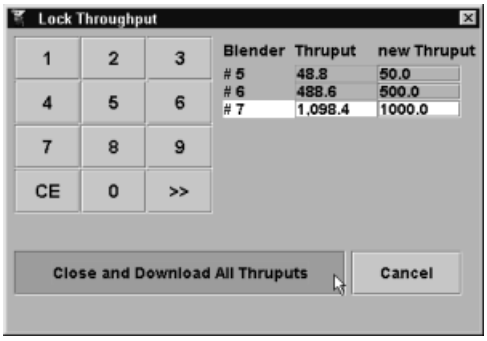
Startup Process:

1. **When you open the Yield Screen, first select a Line from the drop-down menu. Verify that all blenders are ONLINE.** G2 will load the line into the Yield screen. All blender Ids and their corresponding information will be loaded into the appropriate fields. If any blender is listed as **OFFLINE** meaning G2 cannot communicate with that blender for any reason, the corresponding table of information for that blender will be grayed out. Before proceeding with Yield Control, you will must bring that blender **ONLINE**.

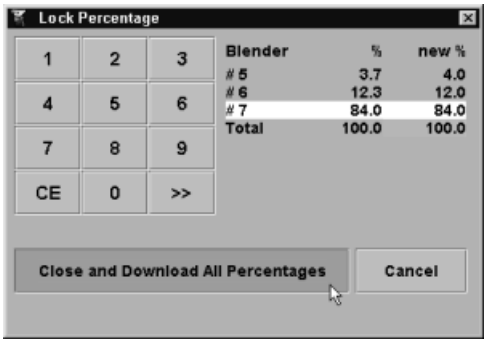
2. **Setting Voltages for each Blender.** Clicking the voltage field in the Blender table displays a keypad for setting voltage. All blenders will be displayed within the keypad. The operator will be able to set all voltages before downloading to the blenders. To set voltage for a blender click the blender ID. The blender will highlight. Enter the voltage using the keypad. When all voltages are set, clicking **Close and Download All Voltages** will download the voltages to all blenders. You may cancel at any time.



3. **Locking Throughput -** The blenders require about 10 to 15 cycles to learn steady throughput. When throughput is learned, the voltage fields will turn from yellow to green when throughput is learned. When all Blenders have learned the throughput (all are green), throughput can be locked. To lock throughput, click any of the **Thruput** fields in the blender tables. A throughput keypad will appear. Using the keypad, enter the desired throughput for each blender.

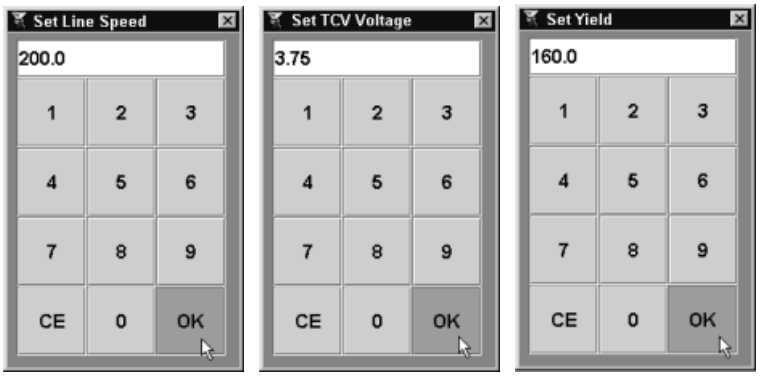


4. **Locking DNS Percentage –** When throughput is locked, the operator can control the DNS % of each blender. All percentages across all blenders must total 100% before a download can proceed.



5. **Setting Total Throughput -** When all blenders have learned and locked throughput, total throughput can be adjusted. To do this, click the **Total Thruput** field and use the popup keypad to set and download the total throughput.

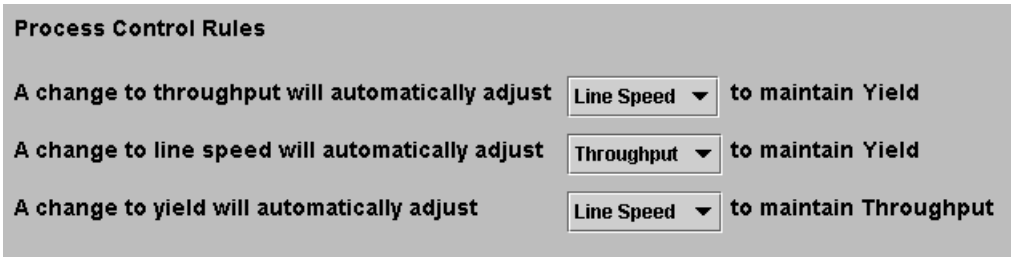
6. **Controlling Line Speed, Take-Off Voltage and Yield** – At the Take-off side of the Yield screen, Line Speed, Voltage and Yield can be individually set.



Setting DNS Control Priorities

In the G2 Client's Setup screen (System Tab), the priorities of DNS Control can be set. These global priorities apply to all DNS or Yield control screens. To understand how to set the priorities in Setup, you must first understand what each column represents and how to read the DNS Control table in Setup. Item in the first column under the title *DNS Control* are considered the item you are making a change to when in the DNS Control Screen or the Yield Screen. These items in the first column are Throughput, Line Speed and Yield. When a change is made to the item in the first column, the bulleted item that follows will be the item that will be adjusted, thus maintaining the unselected item in that row.

Using the first row as an example (Throughput, Line Speed and Yield) the following rules apply: For Throughput, if Line Speed is selected, when manually adjusting Throughput the Line Speed will be altered to change the throughput, but Yield will remain the same. If Yield is selected rather than Line Speed, Yield will be modified when adjusting Throughput.



Exceptions to the Setup screens DNS Control Priorities are the following modes of operation:

- **YLDX – Single Extruder, Maintain Yield by controlling extruders**
- **YLDT – Single Extruder, Maintain Yield by controlling take-off**

DNS Mode – Co-Extrusion – Setup rules apply

MLAN Communication Wiring (MLAN or RS-232)

Weigh Scale Blender (WSB) controllers can communicate over two different protocols, MLAN and RS-232. Both are available at the DB9 port on the WSB controller. MLAN should be used in all factory installations; however, RS-232 may be used for lab testing and limited applications. RS-232 is NOT recommended for factory installations.

MLAN Communication

If you are communicating over a distance greater than 50 feet or with more than three WSBs, then you must use the **MLAN Signal Amplifier** (part # MLAN-SA). Users of the G2 Server software with 2 or more WSBs must have a G2-SA. The G2-SA serves as the MLAN Signal Amplifier and contains a registered security key, which is required to operate more than a single WSB. The MLAN-SA and the G2-SA utilize a stronger, more reliable signal transmission method than a standard RS-232 interface. It utilizes optically isolated couplers for all communication lines to reduce the potential of noise and other electrical interference from entering the computer circuitry.

The standard computer RS-232 serial port signal is fed into the MLAN-SA unit or the G2-SA unit and then sent out to the WSB controllers through optically isolated signal drivers. At the controller this MLAN signal is carried onto the board through additional optical couplers for further isolation. The MLAN-SA and G2-SA come with a cable hardwired into it with a DB9 connector on the other end. The DB9 connector is for connecting the MLAN-SA or G2-SA to a computer's RS-232 (serial) port.

The cable from the **MLAN-SA** or **G2-SA** devices to all WSB controllers (or to other **MLAN-SA** devices), utilizes the following pin connection:

MLAN TO CONTROLLER CABLE PINOUT

MLAN-SA DB9 Connector pin # (or terminal strip)	**Wire Color**	**WSB Controller DB9 Connector pin #**
1	Black	1
4	Red	4
6	White	6
7	Green	7
5	*Shield*	**connected to housing (not pin 5)**

Up to 25 WSB controllers may be connected in parallel using one MLAN-SA. If you are connecting more than 25 controllers or all your cabling (including drops) totals over 2000 feet, additional MLAN-SA devices are recommended.

The **shield** is connected at all points **except** at the controller where is connected to the housing of the cable (see wiring diagram). This shield is intended to tie all external noise to ground at the MLAN-SA/G2-SA, at the computer and at the WSB controllers.

MLAN requires four (4) conductor cable with a shield for conveying information. Wire size should be 18 to 22 gauge. Use 18 gauge for the long runs (especially over 500 feet). Twenty-two (22) gauge is recommended for the "drops" to each controller. Twenty-two (22) gauge wire is used at each controller termination because it solders more easily to the DB9 connector required at each WSB controller location.

We recommend: BELDON WIRE, Part #9402
or CAROL WIRE, Part #C2555

Conductors are Black, Red, White, and Green, plus a shield.

Black	is the positive power supply (16 to 24 volts)
Red	is the neutral from the power supply
White	is communication from PC to WSB controller
Green	is communication from WSB controller to PC

Wiring generally requires a single cable run through the ceiling over all the process machines with "drops" to each controller. This main wire may "T" off to other locations if required for more efficient wiring. Be sure to read the WIRE CONSIDERATIONS section that follows and also review the wiring diagram within that section.

RS-232 Communication (for limited applications)

RS-232 uses a direct connection from the computer to the WSB controller. This type of communication is reliable for short runs where little or no "noise" or static interference is present. This may be the case in a lab or another closely controlled environment. A low noise environment is not common in a factory and we do NOT recommend RS-232 for factory installation. Other restrictions are that the computer must be close (less than 50 feet) to the WSB controller and can only communicate with a few units (maximum of three). If all three conditions are met, then you may cable directly to the RS-232 serial port on your computer without any other hardware interface. Under these circumstances, the MLAN-SA is not required. The proper pin connections are as follows:

RS-232 TO WSB CONTROLLER CABLE PINOUT

WSB DB9 Connector	Computer Connector		
pin #	DB9	or	DB25
3	3		2
2	2		3
5	5		7 and 1
	6, 7, 8 pins tied together		4, 5, 6

Do NOT use a standard off-the-shelf cable. Standard cables have ALL pins connected, or at least more than just those listed above. ALL pins connected will NOT work. You must wire a special cable according to the diagram provided. You may also obtain these cables from us.

Wiring Consideration

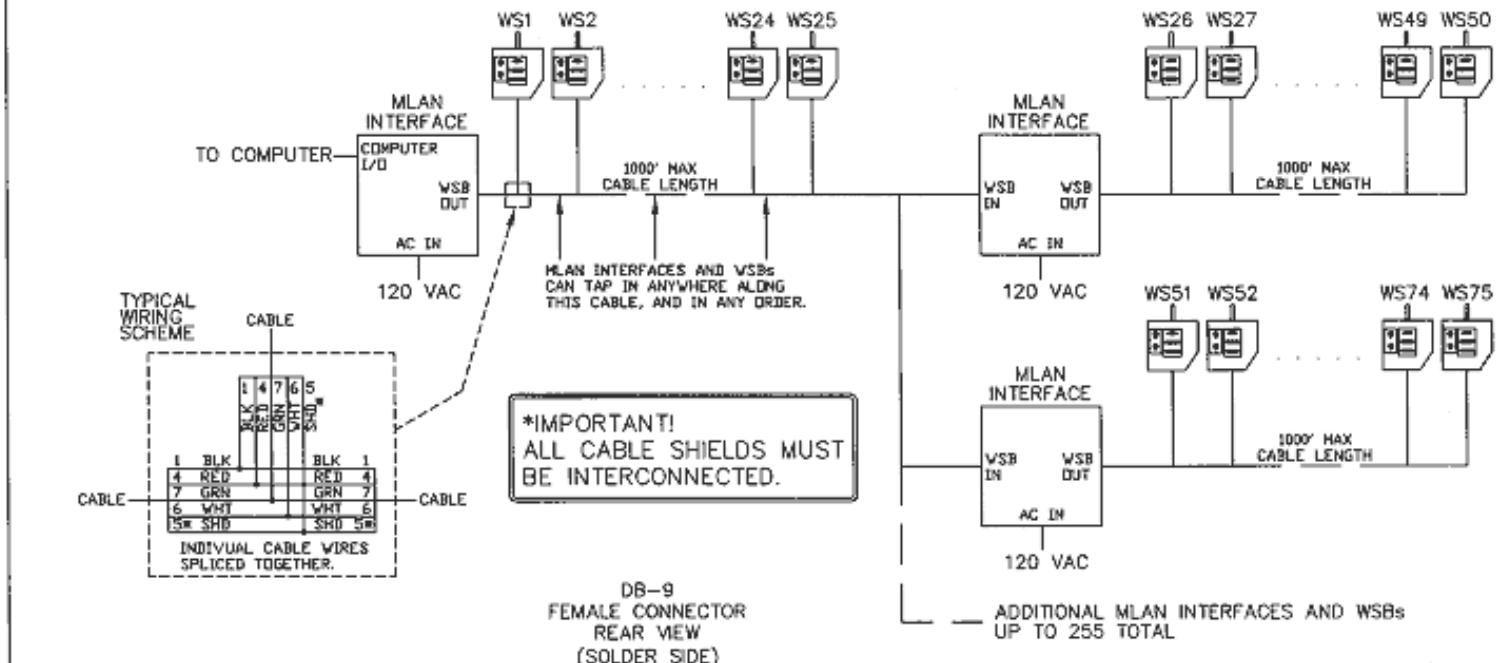
The wiring of your communication lines is very important for reliable operation. To minimize problems, consider the following:

1. Communication lines are **low voltage** lines. Be sure that these lines are not bundled to any high voltage lines. If you run them in conduit, do not run high and low voltage lines together.

2. It is not necessary to run this wire in conduit. If you do run cables without conduit, do not wire tie these lines to material conveying lines or other conduit containing high voltage or high amperage electrical lines.

1. Keep all **communication lines** away from all **vacuum loader conveying lines**. Conveying plastic produces **extreme** static charges. An electrical line, even in conduit, that runs next to a vacuum line, can introduce extreme static pulses into the processor. Keep these lines **separated** from conveying lines.

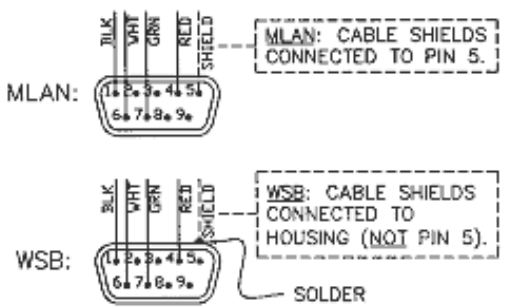
MLAN INTERFACE WIRING EXAMPLE



DB-9 PINN	CAROL WIRE #C 2555	BELDEN WIRE #9402
1	BLACK	BLACK
4	RED	RED
7	GREEN	GREEN
6	NATURAL (WHITE)	WHITE
5*	SHIELD	SHIELD

IBM DB-25	IBM DB-9	MLAN DB-9	FUNCTION
3	2	2	MLAN OUT TO IBM
2	3	3	MLAN IN FROM IBM
1,7	5	5	GROUND

DB-9 FEMALE CONNECTOR REAR VIEW (SOLDER SIDE)



NOTE:
ALL BULKHEAD CONNECTORS ARE MALE DB-9 ON BOTH MLAN INTERFACE UNITS & WSBs.

ALL CABLE ENDS ARE FEMALE DB-9 CONNECTORS.

Magnire Products Inc.
Aston, PA
610-459-4300
FAX: 610-459-2700

MLAN INTERFACE WIRING EXAMPLE

DRAWN BY:	DATE DRAWN
JSH	5/17/95
SHEET: 1 OF 1	DATE CHANGED: 9/25/96

Using a TCP/IP Network

Gravimetric Gateway Ethernet

Released in version 3.0, a feature for Ethernet communications to the Maguire Weigh Scale has been added to the G2 Server. G2 can communicate via Ethernet to another Ethernet enabled device, which then communications to the weigh scale blenders via RS232, a serial bus.

The Maguire Weigh Scale blenders have RS232, serial, communication modules. Communicate speed is limited at most 2400 baud. Currently, by default they communicate at 1200 baud. This speed is also limited by the fact that it is serial communications, which limits communication to a single device at any one time.

Up until G2 version 3.0, previous network topology consisted of blenders interconnected though serial RS232 and a G2 server computer connected to the serial bus. The G2 server acted as a master, and probed the blenders, slaves, for information, one at a time.

Because only one device can communicate on the serial bus at any one time, a bottleneck in communication throughput occurs and limits performance. With this in mind, the new G2 Ethernet feature seeks to improve communication throughput though use of better network topology. Although, the time it takes to communicate with any one blender is not affected, communication can be multitasked though use of Ethernet.

Ethernet

Because the blenders need the serial bus, this remains part of the equation. Ethernet increases throughput by changing the network topology. Typically an MLAN network of blenders use a single serial bus, which is part of the G2 Server computer. This single serial bus of Weigh Scale Blenders can now be separated into two or more groups of WSBs thus dividing the communication load among other satellite computers or other Ethernet devices.

G2 is capable of communication via Ethernet to an Ethernet-enabled device connected to each serial bus. Because Ethernet is built on collision detection protocol, it is much faster than RS232, and G2 can *virtually* communicate in parallel to multiple network devices. Therefore, G2 can communicate with multiple blenders simultaneously, as oppose to one at a time in previous configurations.

In order to divide the serial bus into smaller chunks to take advantage of Ethernet's capability to communicate faster, an Ethernet enabled device must be used to connect the WSBs to an existing CAT 5 Ethernet network.

Ethernet-enabled devices; the G2-ES

An Ethernet-enabled device can be described as a device that converts serial communication to Ethernet communication. These devices can be a hardware device build exclusively for the purpose of Ethernet-to-serial conversion or the Ethernet-enabled device can be a computer acting as an Ethernet access device by use of the G2 Satellite ComServer, which is part of the G2 Software. Computers utilizing the Satellite ComServer use the computer's network card and COM port to allow access to WSBs on the MLAN network by the G2 Server. The G2 Satellite ComServer requires only a minimal computer system to operate. Both of these two Ethernet-enabled methods have been tested.

Ethernet-to-Serial Converter hardware is available from Green Bridge Station Technologies (the developers of G2) or through Maguire Products Inc.

G2-ES - Single serial port, Ethernet to serial converter

The Satellite Comserver can run on any Windows based computer that has a network card and a COM port. It can run on the same computer as the G2 server and/or a G2 Client or may run independently from the G2 Server or Client software. It uses very little processing power and can be installed on older computers that have at least a Pentium class processor or compatible and 32 Meg of RAM.

The following diagrams shows two different possible network topologies. The diagram 1 below is using standard RS-232 cabling and junction. Standard RS-232 cabling is available from Maguire Products Inc. For more information regarding RS-232 review the G2 Pre-Sale Guide available online at www.maguire.com/g2, or contact Maguire Products Inc. at 610-358-9800. Diagram 2 below is using CAT5 Ethernet and G2-ES Ethernet to Serial Converters. RS-232 and CAT5 Ethernet with G2-ES's can be combined and implemented at the same time on a single G2 Server computer.

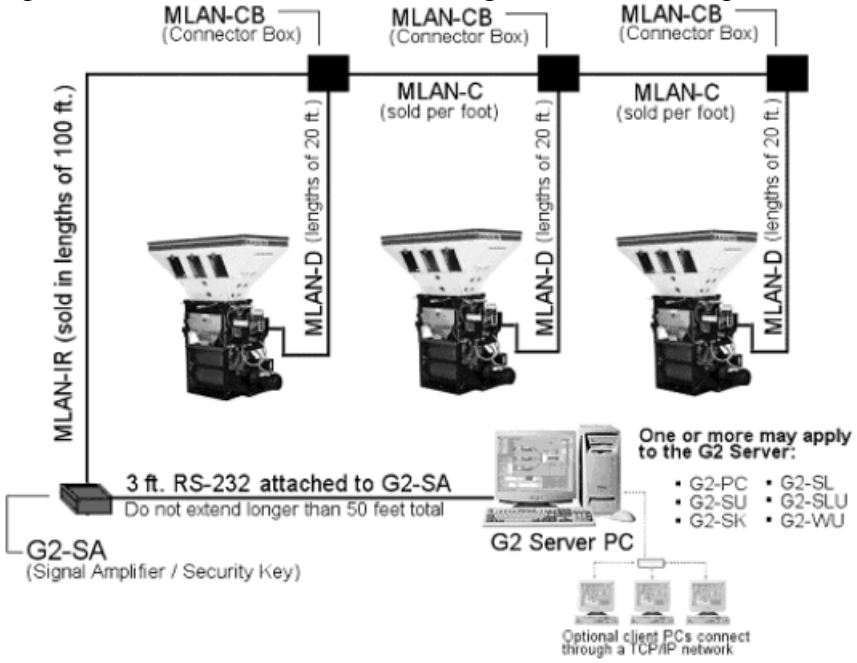


Diagram 1 - Standard RS-232

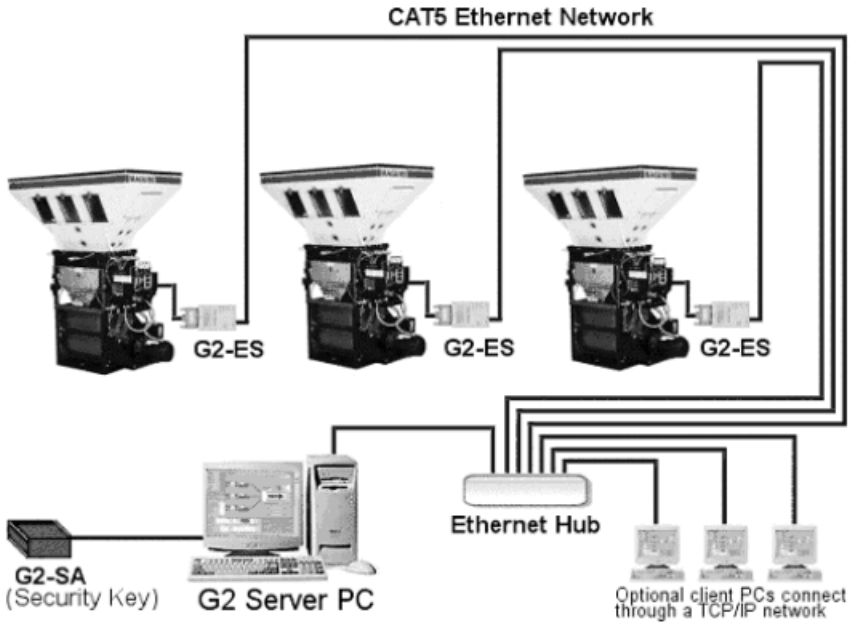
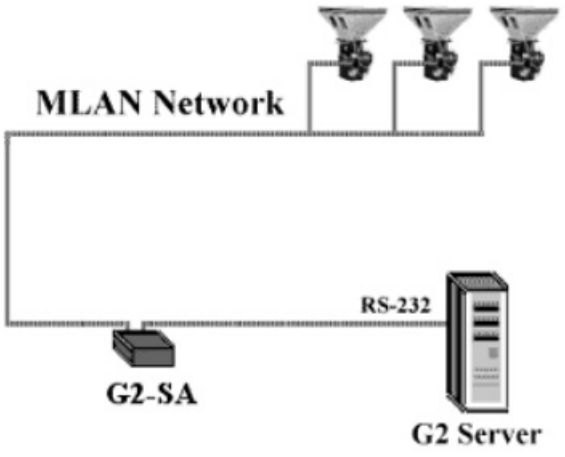


Diagram 2 - CAT5 Ethernet and G2-ES Ethernet to Serial Converters

Notes on Diagrams:
Only one G2-SA is required per G2 Server. Ethernet can be run to an approximate maximum distance of 100 meters. RS-232 is stable up to a distance of 50 feet with three or fewer WSBs. If you are communicating over a distance greater than 50 feet or with more than three WSBs, then you must use the **MLAN Signal Amplifier** (part # MLAN-SA). The MLAN-SA utilizes a stronger, more reliable signal transmission method than a standard RS-232 interface. It utilizes optically isolated couplers for all communication lines to reduce the potential of noise and other electrical interference from entering the computer circuitry. The G2-SA is an MLAN-SA with the addition of a built in security key.

Up to 25 WSB controllers may be connected in parallel using one MLAN-SA. If you are connecting more than 25 controllers or all your cabling (including drops) totals over 2000 feet, additional MLAN-SA devices are recommended.

Pictured below is a typical common setup of a G2 Server PC connected to the MLAN Network.



Satellite ComServer Setup

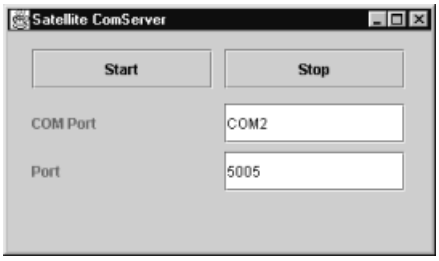
The Satellite ComServer is a G2 utility that enables a computer on a TCP/IP network to *SHARE* its COM port thus enabling the G2 Server to remotely access one or more blenders attached to that COM port.

The G2 ComServer is an install option during the G2 installation wizard. To install the ComServer on a computer select this option along or in conjunction with other options during setup.

Running the G2 ComServer can either be done through the user interface by selecting the Satellite ComServer from the start menu, or by modifying the shortcut command line to start without a user interface.

User Interface

The window pictured below is the G2 Satellite ComServer user interface. This user interface is started by clicking the Satellite ComServer icon in the start menu and used to manually configure and start the Satellite ComServer.



Before starting the ComServer program, you must specify the COM port and the Port number. The COM port is the computers serial port that will be used by the ComServer. This port is the same port that the Weigh Scale Blenders are attached to on this computer. Valid entries for the COM Port are 1, 2, 3 or 4. The "Port" number is the port that the Satellite ComServer listens for requests from Client computers or the G2 Server. The valid range of port numbers is 0-65535. It is recommended that you use ports within the range of 5005 and 6000 to prevent possible conflicts with other programs and protocols. A typical example of a valid port is "5005".

Command Line Auto-Configuration

The Satellite ComServer can be configured to retain the COM port / port settings and run hidden from view on the computer. This can be helpful if you do not want the Satellite ComServer to be closed accidentally or to start automatically when the computer is booted up. By default the Satellite ComServer icon in the start menu is configured to start in the manual mode. To edit the command line and configure it to start automatically on specified COM port / port settings follow these instructions.

1. Right-click the start button and choose Explore.
2. Double-click the Programs folder in the right pane.
3. Double-click the Gravimetric Gateway Folder
4. Right-click the Satellite ComServer icon and choose "Properties".
5. In the Target field, make the following changes:
   - Change "dac.SatelliteComServer -le English" to "dac.servers.ComServer COM1:5005" (replace COM1:5005 with the ports you wish to specify)
6. If you wish to have the Satellite ComServer start when the computer boots, place a copy of this

shortcut icon in your Startup folder in your start menu.

Below, the following command lines show the difference between an auto-configured and manually configured command line using the user interface.

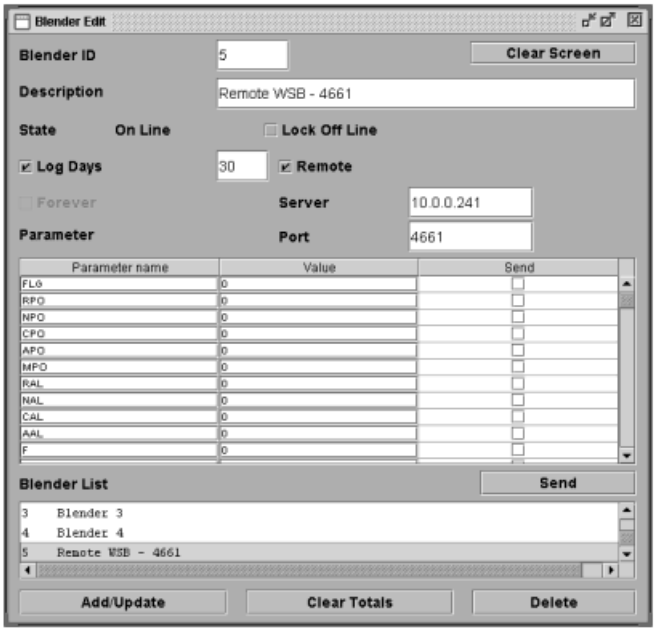
AUTO-CONFIGURED:
C:\g2\jre\bin\javaw.exe -cp C:\g2\g2.jar -DGG_HOME=C:\g2 dac.servers.ComServer COM1:5005

MANUAL-START (uses the Satellite ComServer user interface):
C:\g2\jre\bin\javaw.exe -cp C:\g2\g2.jar -DGG_HOME=C:\g2 dac.SatelliteComServer -le English

Configuring a WSB as Remotely accessed though G2 Satellite ComServer or G2-ES
Configuring the G2 Client to use a Satellite ComServer on the network is done in the Blender Edit Screen. In the Edit-Blenders screen, a computer can be configured as *remote* or local. By default, a blender is local. Meaning it is connected directly to the G2 Server that the G2 Client is accessing. For a G2 Server to Access a WSB connected to a Satellite ComServer or a G2-ES, the WSB must be configured as a remote blender. Configuring a WSB as remote requires:

1. Checking the remote checkbox
2. Providing the IP address of the Ethernet device (G2-ES or G2 Satellite ComServer)
3. Specify the port on which the Ethernet device or computer listens.

Blender Edit Screen Diagram example - For more information see Blender Edit in **Client Operation and Administration**



Blender Chip Upgrades
New Program Chip — Installation

In October 1994, the method MLAN for Windows uses to communicate with all WSB controllers was changed. All of your controllers MUST have software dated October 26, 1994 or later to operate with MLAN to its full capacity. To check the date of each controller's software, watch the display closely when you turn power on. One of the first displays you will see is the **version date** (V=41026A or V=41026T). This number is the **year** (4 for 1994), **month** (10 for October), and **day** (26 for the 26th). A "T" indicates 12-component software. If all version dates are October 26, 1994 or later, you do not need to change the chip.

Chips with version dates before October 26, 1994 **must** be changed. If you need a new program chip and we have not provided one please call. There is no charge for these updated chips.

Installation:

1. **DISCONNECT POWER!**

2. **REMOVE THE LID**

   The lid is held on by 10 screws (4 top, 3 left side, 3 right side). Then remove the three screws that hold the panel front to the bottom. This will allow the panel front to lay down flat providing easy access to the circuit board.

3. **REMOVE OLD CHIP FROM BOARD**
   The program chip is the one with a paper label on it (e.g. TC41026A or WS41026A). Stand in front of the controller and look down into the box at the circuit board. The program chip is located on the bottom edge of the circuit board to the right. It is near the side of the board that lies next to the thumbwheel switches.

   The program chip is right next to the memory chip. The memory chip stands higher off the board and may also have a small paper label on it. Be careful not to remove the memory chip. The program chip is to the right of the memory chip, closer to the thumbwheel switches.

   Use a long thin screwdriver to slip behind the chip and pry it **gently** from its socket.

4. **INSTALL NEW CHIP**
   One end of the chip has a small notch in it. Be sure that the chip is installed with the **small notch up**. BE CAREFUL NOT TO BEND ANY PINS. All pins should go into the socket. It is very easy to insert the chip one pin too high or one pin too low. The bottom of the chip will be even with the bottom of the socket if you have installed it correctly.

5. REPLACE PANEL FRONT AND LID

6. PERFORM THE "CLEAR ALL - RESTART" ROUTINE
   This is necessary to clear old memory information and assign new memory positions to match the new chip.

   Do the following:
   With power OFF, hold down the following three keys on the keypad: the TOP LEFT, TOP

MIDDLE, and TOP RIGHT keys. These are the VIEW, BATCH, and EXIT keys.

With all three keys held down, turn power on, then release. Watch the display. It must say "CLEAR ALL." If it doesn't, repeat this step until it does.

7. CONFIRM (OR SET) MODEL NUMBER

All newer versions of software allow the selection of different models. This presets a number of parameters for different types of equipment. Any time power is turned on the model number is displayed. At this point, **confirm** that you have the proper model selected.

There are various models; the 100 and 200 series display weights in 1/10 grams
(x.x), whereas the 400, 900, and 1800 series display weights in full grams
(x).

To change models:

Press:	*	Display will say (PASSWORD).
Press:	97531	Display will say (MODEL 220) or current model.
Press:	*	To walk through the available models.

When the model you want is displayed, press EXIT.

8. RECALIBRATE - LOAD CELLS

Follow the **Recalibrate Load Cells** procedure given in the WSB Instruction Manual.

Changing the Baud Rate of the MLAN Network

Increasing the Maguire Weigh Scale Blenders Communication Speed

The G2 Server communicates with the Maguire Weigh Scale Blenders over an RS-232 serial line at a default speed of 1200 baud. The baud rate of 1200 is used for a few reasons. Reason number one is stability. Typically communications with the blender are in an electrically noisy environment. A rate of 1200 baud was found to be relatively stable in this noisy environment. Additionally, the amount of data typically transferred over the serial communication line is limited and higher speeds are typically not needed.

With the introduction of the G2 Server software, greater access to data was made possible to the operator. In the process of accessing greater amounts of data from the blenders, the G2 Server puts a greater demand on the serial communications causing a potential need for a higher speed of communicate to the blenders. This technical document will detail the necessary steps to increase the speed of communications to the blenders while maintaining communication stability.

Maguire Weigh Scale Blender controllers with a chip date on or after March 31, 2000 have the capability to switch the baud rate from 1200 to 2400. Increasing baud rate from 1200 to 2400 effectively doubles the speed of communications between the G2 Server and the Maguire Weigh Scale blenders. Increasing the baud rate to 2400 requires that all blenders have the capability of communicating at 2400 baud. That is, all blenders must be capable of running at 2400 baud. You cannot mix some 1200-baud blenders with 2400-baud blenders.

How to Increase the Baud Rate

The G2-SA (black box signal amplifier/security key), the Maguire Weigh Scale Blenders and the G2 Server all must be changed from 1200 to 2400 baud.

To increase the Baud Rate from 1200 to 2400 the following must be done. Each step will be explained in this document.

1. **Check ALL blenders to see if they can be re-set to 2400 baud. All blenders must be able to communicate at 2400 baud.**

2. **Open the G2-SA signal amplifier and place a jumper across pins 2-3.**

   NOTE: Other types of Maguire amplifiers specifically the MLAN-SA, MLAN-SE or G2-SE are simple amplifiers and do not require any modifications. Only the G2-SA unit requires the internal modification of placing a jumper across pins due to the necessity of communicating with the security key.

3. **Set the G2 Server's command line to run at 2400 baud.**

   NOTE: The G2 Server MUST be version 3.1.3 or later to change the baud rate at the G2 Server.

Changing the Baud Rate of the Blender Controller

Not all blender controllers have the capability of setting the baud rate to 2400 baud. Whether your blenders can be switched to 2400 baud depends on the version of the controllers chip. All controllers display the chip version on the LED display when powered on. Chips versions numbers indicate a date. For instance chip "60603A" means 1996 (6), June (06), 3rd (03) followed by "T" for twelve-software or "A" or “B” for four software. Refer to the table below to determine the meaning of each digit in the chip version.

Digit 1		Digits 2-3		Digits 4-5		Digit 6	
YEAR	CHARACTER	MONTH	DIGITS	DAY	DIGITS	SOFTWARE	CHARACTER
1992	2	January	01	1	01	4 Software	A
1993	3	February	02	2	02	4 Software	B
1994	4	March	03	3	03	12 Software	T
1995	5	April	04	4	04		
1996	6	May	05	5	05		
1997	7	June	06	6	06		
1998	8	July	07	7	07		
1999	9	August	08	8	08		
2000	0	September	09	9	09		
2001	1	October	10	10	10		
2002	B	November	11	11	11		
2003	C	December	12	12	12		
2004	D			13	13		
2005	E			Continued to 31			

When powered on, the blender will display V=xxxxxx where x is the chip version. Chips released as 00331x, (March 31, 2000) or later will have the option of increasing the baud rate. To verify this in your controller, power on the controller and observe the controller’s version number. If the version number is 00331(T or A), the controller is able to toggle the baud rate between 1200 and 2400. If your controller version is earlier than this version then baud rate changes are not possible without a chip upgrade. Contact Maguire Products Inc. for chip upgrade information.

Once you have determined that all blenders will support the 2400 baud rate, you can begin changing them by doing the following at the controller keypad:

1. **Press * then enter password to enter programming mode (factory default password is *22222*)**
2. **Press * 95**
   If the controller is capable of modifying the baud rate you will see the display as: **BAUD 1200**. *(If you see INVALID, the controller does not have the option of changing the baud rate. If your controller displays INVALID, a chip upgrade would be necessary to allow for a baud rate change.)*
3. **Press * once. Controller display will toggle to BAUD 2400**
4. **Press EXIT twice.**

Changing the Baud Rate of the G2-SA

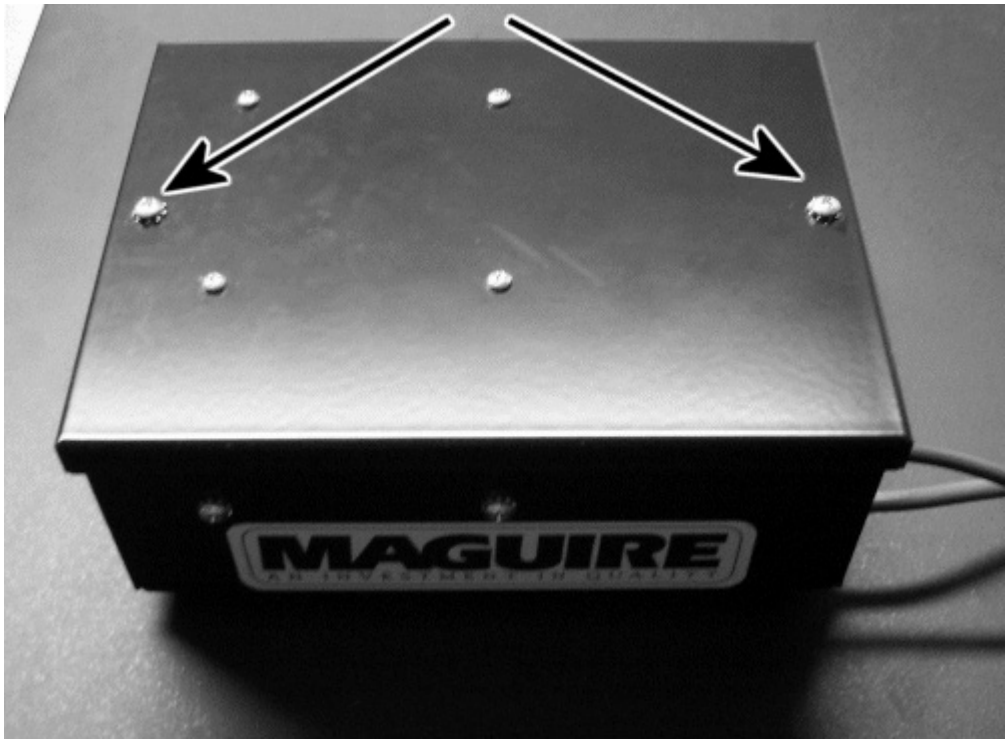
From the factory, the G2-SA runs at 1200 baud. By adding a jumper across two pins within the G2-SA unit, the baud rate can be increased to 2400 baud. The following instructions will explain how to open the G2-SA unit and add a jumper across the pins, setting the baud rate to 2400 baud.

It will be necessary to obtain one jumper or shorting block that fits pins. Jumpers can be bought at most computer and electronic stores or Internet. If necessary they can be purchased from Green Bridge Technologies (www.gbs.com).

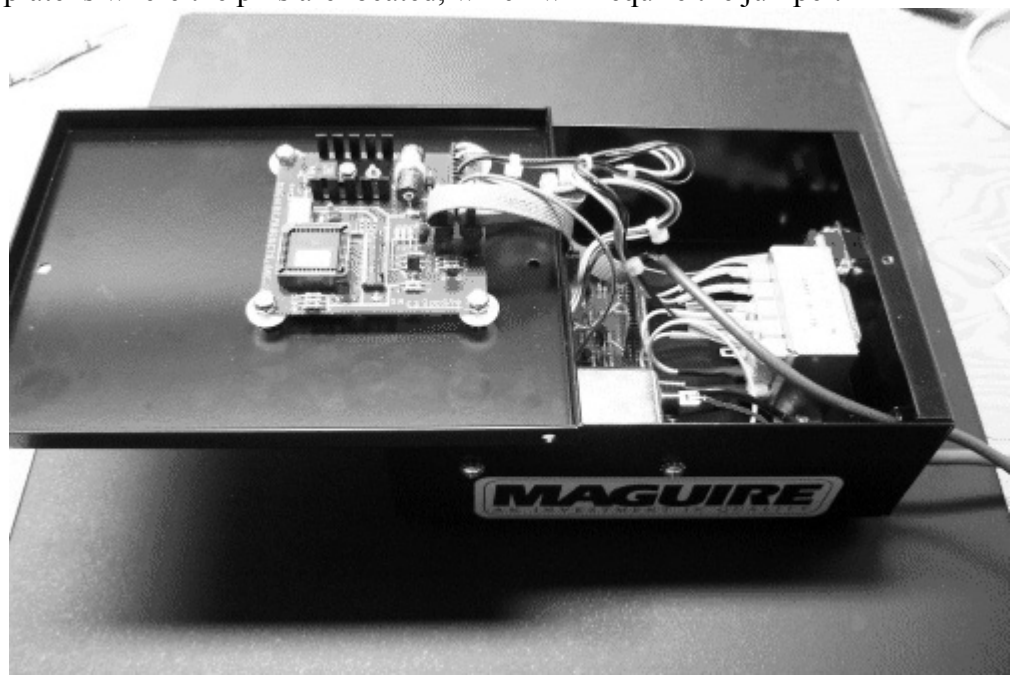
standard jumper ordered over the Station

Before opening the G2-SA unit, it must be unplugged from power and disconnected from the computer as well as disconnected from the network of blenders.

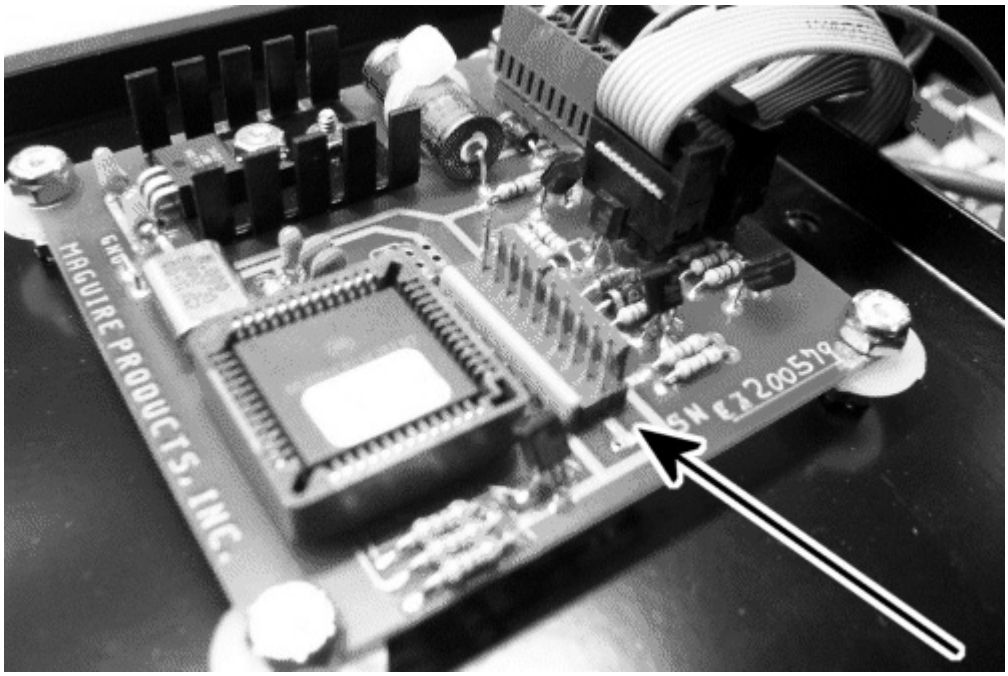
Remove the two end screws from the top of the G2-SA unit. Do not remove the remaining 4 screws. See picture below.



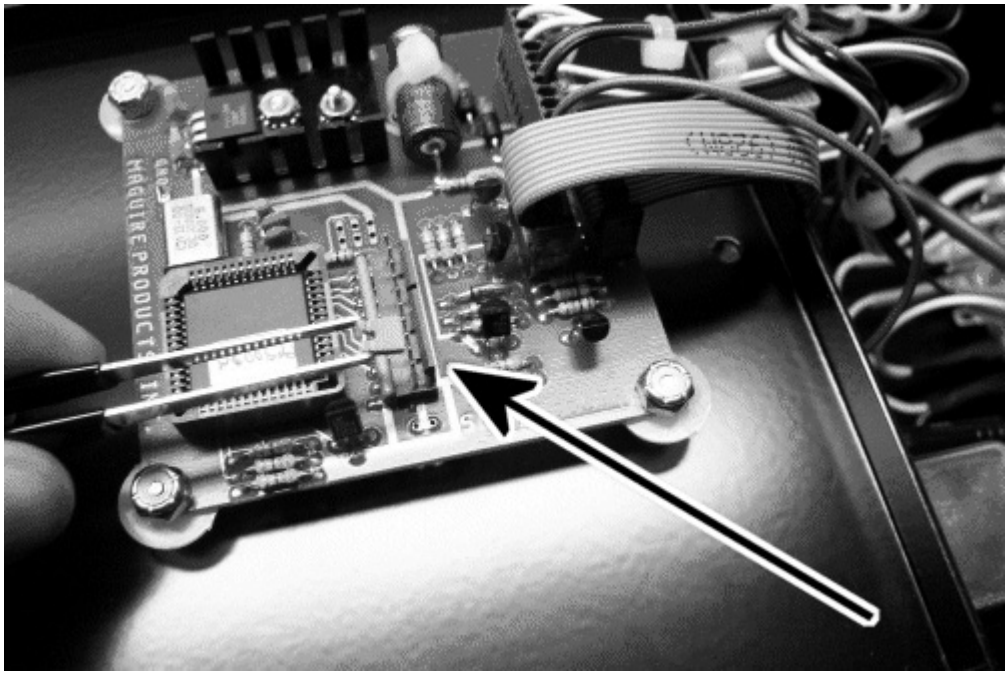
Tilt the cover plate away from the cables that exit the G2-SA unit being careful not to stress the wires within the unit. Lay the cover plate across the unit case as pictured below. The circuit board mounted on the cover plate is where the pins are located, which will require the jumper.



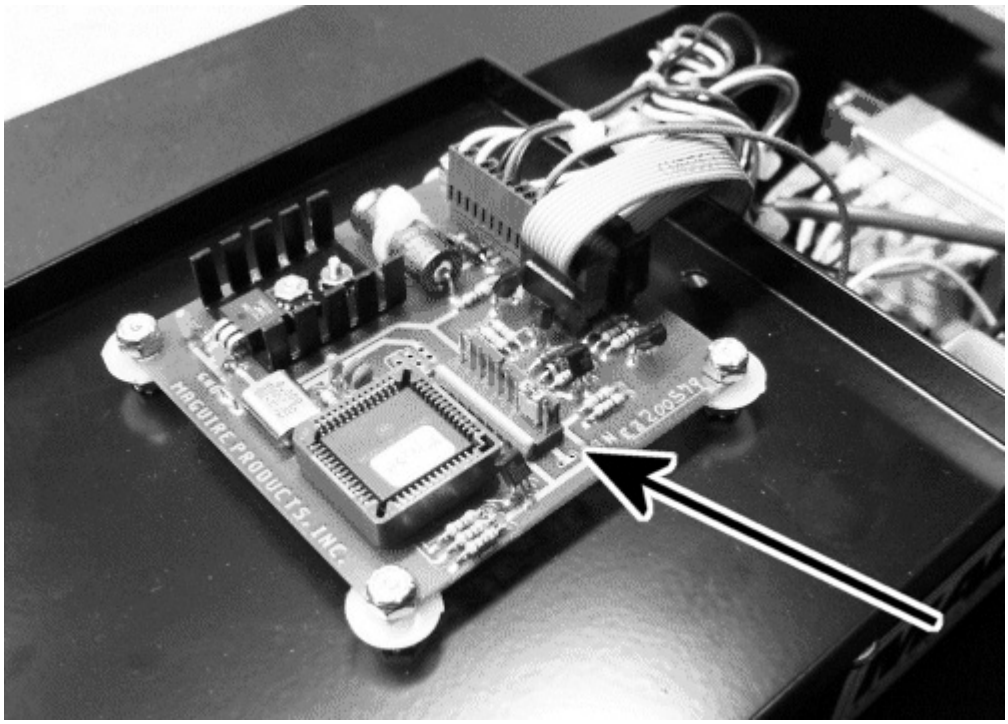
Locate the pins on the underside of the cover plate. The pin closest to the edge of the circuit board is considered PIN 1 while the pin closest to the center of the circuit board is considered PIN 10. In the picture below, the red arrow points to PIN 1.



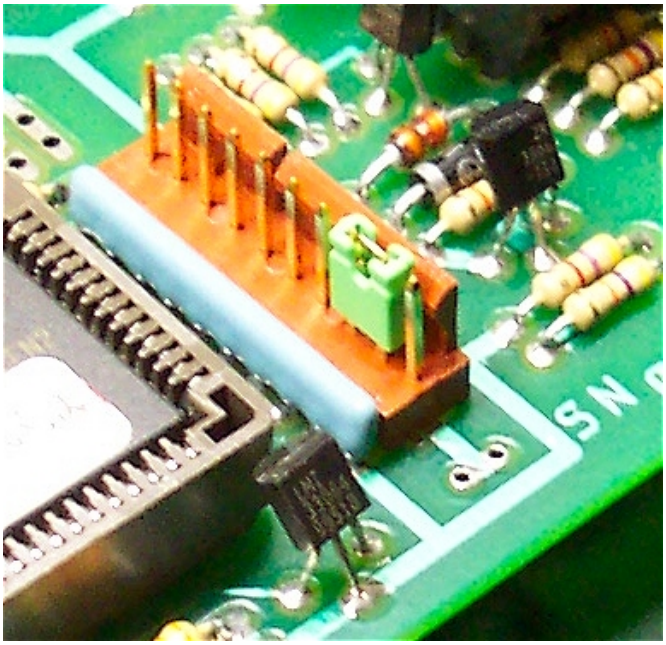
The jumper will be placed across pins 2 and 3. Carefully place the jumper so that it crosses PIN 2 and PIN 3. No tool is necessary to place the jumper across the pins and may be pressed on by hand.



In the pictures below, and on the following page, the jumper has been placed on the circuit board across PIN 2 and PIN 3.



In the close-up image below, the jumper is placed across PIN 2 and PIN 3. Be sure that the crossed pins are as pictured below to prevent circuitry damage when the unit is powered on.



After the jumper has been placed across pins 2 and 3, carefully close the case cover plate and secure the cover plate with the two screws. That completes the baud rate changes to the G2-SA unit. Reconnect the G2-SA to the G2 Server, secure the blender network cable and plug the unit into a power source.

Changing the Baud Rate of the G2 Server

On a Windows 95/98/ME/2000/XP operating system, changing the baud rate to 2400 baud at the G2 Server is accomplished by making a change to the G2 Server program or by changing the command line located in the G2 Server's shortcut.

Changing the Baud Rate within the G2 Server Program (Versions 3.1.3 and later)

G2 versions 3.1.3 and later will give you the choice to select the baud rate from the Baud Rate dropdown menu. The Baud Rate menu is located near the top of the G2 Server program to the right of the COM Port dropdown menu. The choices are **1200** and **2400.** If the G2 Server is currently running it must be stopped but not closed in order to change the baud rate. After making your selection from the dropdown, start the G2 Server.

Changing the G2 Servers Command Line (G2 Versions 3.1.3 and later)

During install the G2 Software places two G2 Server shortcuts on the PC. One shortcut is located within the start menu within the Gravimetric Gateway program group. The other shortcut is located within the c:\g2 folder. In most cases the shortcut in the start menu is the shortcut that is used to start the G2 Server. By changing the command line, the G2 Server will start at 2400 baud automatically and the option of changing the baud rate at the G2 Server is disabled.

On all Windows operating systems except early versions of Windows 95 follow these steps to make the command line change that will cause the G2 Server to start communicating at 2400 baud.

1. **Click the Start Button and go to Programs and locate the Gravimetric Gateway program group.**

2. **Right-Click on the G2 Server icon located within the Gravimetric Gateway program group. In the pop-up menu, click "Properties".**

3. **In the Shortcut tab, click in the field next to "Target:" The text within this field is the command line that starts the Gravimetric Gateway Server.**

4. **Go to the end of this line of text.**

5. **Add the following to the end of the command line:**

   baudrate=2400

   The complete command line will read as follows ending with baudrate=2400 preceded by a space:

   C:\g2\jre\bin\javaw.exe -cp C:\g2\g2.jar -DGG_HOME=C:\g2
   -DGG_DATA_HOME=C:\g2\g2data dac.G2Interface baudrate=2400

6. **When completed, click Ok.**

The shortcut located within the c:\g2 folder can also be changed to start as 2400 baud if necessary. Locate the shortcut by double-clicking My Computer, C: Local Disk, then find the g2 folder. Right-

click the g2 folder and find the shortcut **G2_Server.** As above, append to the end of the command line **baudrate=2400** preceded by a space.

Note: The above instructions assume you have installed the G2 software in its default location of c:\g2.

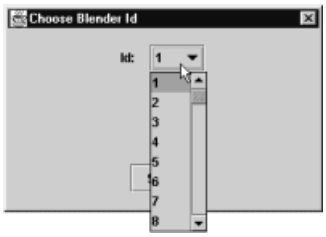
That completes the required changes to communicate at 2400 baud rather than the default 1200 baud. Typically communicating at 2400 baud will not in itself cause any additional communication errors. Communication speeds will double in their response time and should create a noticeable increase in downloads and display updates.

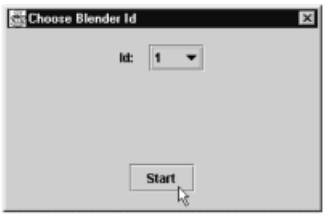
G2 DEMO Server Operation

G2's DEMO mode allows the user to preview actual operation of the G2 Server and the G2 Clients. G2 running in Demo Mode does not require actual blenders to communicate with. In DEMO Mode G2 communicates with simulated blenders to demonstrate the actual operation of G2. This allows a full mockup of an actual setup using multiple blenders in any mode or configuration.

How to run in DEMO Mode
To start using G2 in DEMO Mode, follow these steps:

1. **Start up one or more G2 Simulated Blenders** - Click the Simulated Blender icon in the Gravimetric Gateway program group of your start menu. For each simulated blender choose a new Id number. Click Start to power up the simulated Blender.



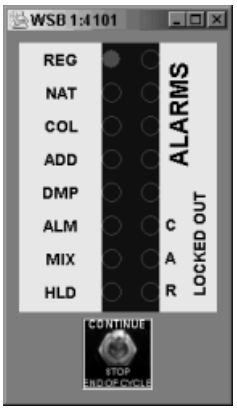


Blenders 1 thru 10 are pre-configured blenders that are set to simulate specific models. They are as follows:
WSB Id 1: 100 Series / 4 software / Chip Version B1025A
WSB Id 2: 100 Series / 12 software / Chip Version B1025T
WSB Id 3: 200 Series / 4 software / Chip Version B1025A
WSB Id 4: 200 Series / 12 software / Chip Version B1025T
WSB Id 5: 400 Series / 4 software / Chip Version B1025A
WSB Id 6: 400 Series / 12 software / Chip Version B1025T
WSB Id 7: 900 Series / 4 software / Chip Version B1025A
WSB Id 8: 900 Series / 12 software / Chip Version B1025T
WSB Id 9: 1800 Series / 4 software / Chip Version B1025A
WSB Id 10: 1800 Series / 12 software / Chip Version B1025T

2. **Start the G2 Server** - Click the G2 Server icon in the Gravimetric Gateway program group of your start menu. **Under Mode in the menu, select Demo**, then Start G2 Server. (Server must be stopped to access the Mode menu.) The G2 Server is now running in Demo Mode and can only access Simulated Blenders.

3. **Start the G2 Client** - Click the G2 Client icon in the Gravimetric Gateway program group of your start menu. By default the Client will connect to the G2 Server running on the same computer. When running in Demo Mode, G2 will have pre-configured information in the databases (in G2 3.1.x only, 3.0.x does not have pre-entered Demo database entries). This information consists of Blenders 1 through 10, Materials, Recipes, Line, Line Recipe, Supplier and Retrieval Times. These database entries are there for your convenience. The user, if desired, can enter additional information. Blenders 1,2,3,4 are individual blenders while blenders 5, 6, and 7 are part of a 3-blender line.

Understanding the Simulated Blenders



Simulated Blender LED View Screen

Simulated Blender Configuration Screen

The simulated blenders are not built into the G2 Server and must be started manually by using the Simulated Blender shortcut in the Start Menu. When the user starts the Simulated Blender, they must first choose a blender Id.

When the Simulated Blender program starts, the blenders LED view screen is displayed. One LED view screen is displayed for each new simulated blender created.

Configuring the Simulated Blender

1. Each simulated blender must be configured before it will run. To configure the simulated blender, **right-click** on the simulated blender LED View Screen.

2. The Simulated Blender Configuration Screen will be displayed. The right side of the Configuration Screen will be a column of parameters. Three parameters need to be set to run the simulated blender. Parameters are set by locating the **parameter name** then editing the **parameter value** then clicking the **change** check box and finally clicking the **Update** button.

3. To make the necessary changes, locate the following parameters and changing the value to the following values:

   XCV – 9
   TCV – 9
   CPL – 600

4. Click **Update** and then click **Start** to start the simulated blender. You may then close the Configuration Screen for this simulated blender.

Starting and stopping the Simulated Blender can be done by clicking the toggle switch to the CONTINUE position or stop position in the Simulated Blenders LED Screen. If further configuring is desired, by right clicking on the Simulated Blenders view screen, the configuration screen allows the user to change anything about the blender including the blender model (series), chip versions, software type, mode, alarm status, parameters values or even hopper total values. It is helpful and recommended to have an understanding of the Maguire Weigh Scale Blender when modifying the Simulated Blender's values. After making a change, click update.

G2 Simulated Blender Ports

Communications between the G2 DEMO Server and the Simulated Blenders are done through use of a **TCP/IP PORT.** By default, the ports range between 4101 and 4356. Blender Id 1 starts at port 4101 and increment as the blender Id increments. So blender Id 2 uses port 4102. If for any reason these ports cannot be used due to a conflict with an existing program on your computer, you may specify a different port number for your simulated blender within the Simulated Blender Configuration screen.

G2 Troubleshooting

In the event that you experience problems using the G2 Server or Client software, please refer to the following information before contacting Technical Support.

Upgrading to the latest version of G2 – In many cases, problems may be corrected by upgrading to the latest available version of the Gravimetric Gateway. To download the latest version of G2, free of charge visit http://www.maguire.com .

If you problem is not covered in the following troubleshooting question and answer section and you are using the latest version available at www.maguire.com please contact technical support.

Q. May we clear the totals in the Weigh Scale Blender controller while using the G2 software to track material usage?

A. **WARNING on Clearing Totals:** Clearing totals in the controller resets the accumulated totals value. The G2 Server uses this value in the controller to track material usage. Clearing totals should only be used in a testing situation and not as standard practice during normal operation if you are using the G2 Server to track material usage. When clearing totals, be aware that G2 will not know that totals have been cleared if the WSB is listed as Offline or the G2 Server is not running, and may report an erroneous totals value in material usage reports. If totals are cleared in the controller, erroneous total values may need to be purged from the G2 material usage database. Erroneous records may be removed by using the Purge/Archive option in the G2 Client interface. To select individual records to purge, use the Advanced Purge option. For more information on purging totals, see the Gravimetric Gateway® Manual.

Notes on Clearing Totals and Turnovers

A common cause for large usage and negative numbers is clearing of the totals or turnovers. Usages stored by G2 for a tag, such as recipe or work order, are different from the accumulated totals stored in the blender. These usages, however, are calculated using the accumulated totals stored in the blender. Therefore, any drastic changes to the accumulated blender totals will directly affect G2 usages.

When totals are cleared at the blender, this resets the accumulated totals back to zero. It's similar to resetting the trip odometer in a automobile. Although the accumulated totals in the blenders are reset, the usages for a tag does not. For example, resetting the blender totals will not reset the amount of material already used for a recipe. G2 will try to compensate for any of these "resets" when G2 detects the change. Changes that G2 doesn't detect will cause invalid tag usage.

Changes won't be detected when G2 is shut down or if a blender goes offline. DO NOT CLEAR THE TOTALS IN A BLENDER WITH THE BLENDER OFFLINE.

If a tag's usage suddenly is invalid (too large or negative) follow the procedure above to reset the blender before a retrieval time. If the retrieval times passes, the invalid usage will be logged. This will result in invalid reports.

Turnovers occur when the accumulated totals in the blenders reach their maximum storage capacity and restart accumulating from zero. Returning to the trip odometer example, it is similar to the trip odometer reaching its capacity, turning over, and restarting at zero.

Each blender component accumulates its own total. Therefore, each component has the potential to turnover. G2 will detect turnovers and calculate the correct usage.

1. Do not clear the totals in a blender while the blender is offline in G2.

When an invalid usage is displayed in the view screens or in a report, it's usually related to one of the above reasons.

Q. May we swap WSB controllers while running G2?

A. Before swapping WSB controllers there are a few things to be aware of prior to moving a controller.

Swapping WSB controllers can create invalid totals. The problem is similar to that described above. The new controller that was swapped in place of the old controller will have different accumulated totals. This will create invalid usage totals when G2 requests the totals from the controller.

The proper way to swap controllers is the following:

1. Stop the current blender while it's still ONLINE.
2. Let a retrieval time pass. This will allow G2 to log material usage since the last retrieval time.
3. Delete the blender.
4. Disconnect and remove the blender.
5. Connect the new blender.
6. In the blenders screen, "Add/Update" the blender.
7. Download a recipe to the blender.

Q. We have experienced problems with invalid numbers in the totals and want to start fresh. How should we proceed?

A. **Making a clean start**

Use this procedure when there are bad or invalid numbers for specific blenders or all blenders in G2. This procedure can be used to correct improperly configured systems, or it can be used to reset the system to a known state such as in the event that totals have been cleared while G2 was unable to detect the change. This procedure will only reset or correct current data in the G2

software not the blenders . For example, if a recipe for a blender is displaying a large or negative usage, this procedure will restart the blender with new total values in G2, thus starting clean. *Caution: Data regarding the blender and the contents of the blender (recipe) will be deleted!

1. Start G2 Server.
2. Start a G2 client.
3. Select Blenders from the Edit menu.
4. Select the blender at the top of the blender list (or a specific blender in question).
5. Click delete.
6. Follow steps 4 and 5 until the blender list is empty (if resetting all).
7. Add the blenders back by creating them using this screen.
8. Download recipes to the blenders.

This procedure basically removes any current values and accumulated totals for a blender along with the blender data. Adding the blenders back will just reinitialize the blenders with empty values (a clean start). You will then need to re-download the recipe back to the blender.

This procedure can be used on a blender that has invalid data.
This procedure will not delete or remove logged totals.

Q. The G2 server is running, but it doesn't detect any blenders.

A. Most likely there's a communication problem. Check all wiring to the WSBs again, and make sure the correct COM port was specified. The COM port can be changed/specified in the G2 Server window. When communication is established between the G2 server and the controllers, both of the signal amplifier lights should be flashing. Also be sure to assign each WSB a unique identification number prior to adding each WSB ID number to the Blender Edit screen.

Q. Only one blender is ON-LINE. G2 Server reports that the other blenders are NOT INITIALIZED.

A. G2 Server is running in "lite" mode. This mode only allows the server to communicate with only one blender. In order to communicate with more blenders, a security key/signal amplifier must be purchased from Maguire Products to enable the full feature version of G2.

Q. Does Maguire provide support for the conversion of MLAN dbs to G2 dbs? any blenders?

A. Maguire does not provide support in the form of specific details or an automatic software conversion tool.

Q. How can MLAN dbs be converted to G2 dbs?

A. Follow these instructions
    1. Open your MLAN db in Microsoft Access, and export them to a csv (comma separated values) formatted file.
    2. Reopen the db in Microsoft Excel.
    3. Reorder the columns so that they conform to the G2 format (described in manual). This requires moving columns to match the order of the G2 format.
       Note: some MLAN columns might not exist in the G2 format, whereas others will have to be purged.
    4. After the db columns are in the G2 format, save the file.
    5. Start the G2 Server and a G2 client.
    6. Select Import from the Main menu.
    7. Choose the target db. Choose the file format. Choose the file that was previously saved.
    8. Import choosing the test option. If there are errors, the db isn't in the correct format. Repeat the above steps. However, if there are no errors in the test, import without checking the test option.

Q. I have security enable but I have forgotten my password and cannot get back into G2. How can I fix this?

A. If the user isn't the administrator, simply have the administrator log in and change the user's password.

However, if it's the administrator who has forgotten his password, then you must do the following:

1. Stop the G2 Server

2. Delete the following files

c:\g2\g2data\Security.key
c:\g2\g2data\Security.data

This simply deletes the security databases and will delete all other users as well. As a rule when security is enabled there is no unpublished user that can log in and only an administrator has the power to disable security. The following is good practice.

If you plan not to use security features, enable the security so that you can assign the administrator's password. Disable security afterward. The first person to enable security has the privilege of assigning the administrator's password. Anyone who attempts to enable security at a later time with an administrator already assigned, will be prompted for the administrator's password.

If you plan to use security, enable security and provide a password. WRITE THIS PASSWORD DOWN SOMEWHERE.

Q. My logged times in the G2 database seems to be consistently off by X number of hours. What would cause this?

This may be due to one of a few things. First check the time of your computer's BIOS. This can be done by typing "time" at the DOS prompt or by double-clicking on the time in the toolbar of

your computer. G2 uses the system time from the BIOS of your computer to log data to the databases. Second possibility may be related to the time zone your computer is using. Java supports only a set number specific times zones because nations are sovereign powers that can and do change their timekeeping systems as they see fit.

WORK AROUND

If your time zone is not listed below and on the following page, it is recommended that you set your computer's time zone to match one of these supported time zones. Because some time zones support daylight savings and some do not, select a time zone that matches your own. If your time zone is not supported and you do not use a time zone from the list, the G2 software may report inaccurate times in logging data.

Time Zone Information

The Gravimetric Gateway Server utilizes the Java programming language as the base of development. The following time zones are Java supported time zones. If your time zone is not listed, it is recommended that you set your computer's time zone to match one of these supported time zones. Because some time zones support daylight savings and some do not, select a time zone that matches your own. If your time zone is not supported and you do not use a time zone from the list below the G2 software may report inaccurate times in logging data.

Zone ID	Zone Name	Uses Daylight Savings Time
GMT	Greenwich Mean Time	No
UTC	GMT+00:00	No
ECT	European Central Time GMT+01:00	Yes
EET	Eastern Europe Time GMT+02:00	Yes
ART	(Arabic) Egypt Standard Time GMT+02:00	Yes
EAT	Eastern African Time GMT+03:00	No
MET	Middle East Time GMT+03:30	Yes
NET	Near East Time GMT+04:00	No
PLT	Pakistan Lahore Time GMT+05:00	No
IST	India Standard Time GMT+05:30	No
BST	Bangladesh Standard Time GMT+06:00	No
VST	Vietnam Standard Time GMT+07:00	No
CTT	China Standard Time GMT+08:00	No
JST	Japan Standard Time GMT+09:00	No
ACT	Australia Central Time GMT+09:30	No
AET	Australian Eastern Time GMT+10:00	Yes
SST	Solomon Standard Time GMT+11:00	No
NST	New Zealand Standard Time GMT+12:00	No
MIT	Midway Islands Time GMT-11:00	No
HST	Hawaii Standard Time GMT-10:00	No
AST	Alaska Standard Time GMT-9:00	Yes
PST	Pacific Standard Time GMT-8:00	Yes
PNT	Phoenix Standard Time GMT-7:00	No
MST	Mountain Standard Time GMT-7:00	Yes
CST	Central Standard Time GMT-6:00	Yes
EST	Eastern Standard Time GMT-5:00	Yes

IET	Indiana Eastern Standard Time GMT-5:00	No
PRT	Puerto Rico and U.S. Virgin Islands Time GMT-04:00	No
CNT	Canadian Newfoundland Standard Time GMT-03:30	Yes
AGT	Argentina Standard Time GMT-03:00	No
BET	Brazil Eastern Time GMT-02:00	Yes
CAT	Central African Time GMT-01:00	No

Q. How do I get Windows 95/98 or Windows NT/2000 to automatically start the G2 Server when the computer is turned on?

A. The simplest way to get any version of Windows to automatically start the G2 Server is by copying the G2 Server shortcut to the Startup folder in the start menu. This, however, does not cause an un-attended computer that is powered on to come up automatically and start the G2 Server if a login is required. If the computer used to run the G2 Server requires a username and password, then this information will have to be entered before the G2 Server will be started unless the computer is re-configured not to require a password or to automatically supply the username and password.

Also in some cases it may be desired to have a computer come up automatically and start the G2 Server if power is lost. Whether automatic power on is possible is dependant on your computer's hardware and how your operating system is setup.

These three issues are addressed below.

BIOS AUTO POWER ON

At the most basic level of your computers hardware is the computer BIOS. Some systems make it possible to "hardwire" your system to start automatically in the event of a power cycle. This would be an option in the computers BIOS and would be labeled as something like "Auto Power On". Not all BIOS's support this feature. As a foot note to power loss in a G2 system, we recommend that a UPS (uninterrupted power supply) be used with the G2 server. This will also protect the server from power spikes.

AUTOMATIC LOGIN

If an unattended boot up of the computer and start up of the G2 server is the goal, the second issue you may have to deal with is the required login. If a computer is not logged into by use of a required username and password, The G2 Server will not start. The need for a username and password will have to be eliminated. Depending on your operating system it will be handled differently.

AUTOMATIC LOGIN - Windows 95/98/ME

In Windows 95/98/ME, you will do the following to eliminate the need for a login username and password.

To prevent Windows 95/98 from prompting you for a password at startup, follow these steps:

Right-click Network Neighborhood, and then click Properties.

On the Configuration tab, click Windows Logon in the Primary Network Logon box, and then click OK.

When you are prompted to restart your computer, click No.

In Control Panel, double-click Passwords.

Click the Change Passwords tab, click Change Windows Password. In the Change Windows Password dialog box, type your current Windows password in the Old Password box (if any). Leave the New Password and Confirm New Password boxes blank, click OK, and then click OK.

Click the User Profiles tab and verify that the "All users of this PC use the same preferences and desktop settings" option is selected. Click Close.

Shut down and then restart Windows 95/98.

AUTOMATIC LOGIN - Windows 2000

In Windows NT/2000 this is accomplished in a different way and a little more straight forward. First you will need to log into the Windows NT/2000 computer as a user with Administrative access.

In the control panel click "Users and Passwords".

Click the Users Tab. Uncheck "Users must enter a user name and password to use this computer." If prompted for a User name and password, enter the user name and password as entered during login.

Click the Advanced Tab. Under Secure Boot Settings uncheck "Require users to press Ctrl-Alt-Delete before logging in.

AUTOMATIC LOGIN – NT

In Windows NT accomplishing an automatic login involves editing the registry. Editing the registry can be tricky and should only be done by someone who understands the Windows registry and how to edit it.

To Enable or Disable the automatic login process on a Windows NT machine, open the registry by going to the Start menu and click Run. Type "regedit" and click OK.

First before editing the registry you should back up the registry. To back up the registry, click Registry in the menu and click "Export Registry File". Give the registry file backup a name such as "regbackup" and place it in the root directory of the c: drive. Select the export range as ALL.

After backing up the registry you will use the small plus to the left to expand the registry's tree. Go to the following location:

HKEY_LOCAL_MACHINE\SOFTWARE\MICROSOFT\WINDOWS\CURRENT VERSION\WINLOGON

Click on the WINLOGON folder

In window to the right

Right-click on AutoAdminLogon
Click Modify
Change the Value Data to: 1

Right-click on DefaultUserName
Click Modify
Change the Value Data to the user name used to automatically log into the machine (such as "administrator")

Right-click on DefaultPassword
Click Modify
Change the Value Data to the password setup for the user that will be automatically logging into this computer. If "administrator" was the username, user the administrators password that was previously entered. If you do not know the password you will have to find out what it is before proceeding.

If there is no a registry entry for DefaultPassword click "Edit" in the menu and choose "New" "String Value". Name the new string value DefaultPassword. Then right-click on it and select modify. Change the Value Data to the password setup for the user that will be automatically logging into this computer. If "administrator" was the username, user the administrators password that was previously entered.

Once the registry has been edited click Registry in the menu and click exit.

Restart your computer.

Using the STARTUP folder in the Start Menu

Starting the G2 Server after boot up is simply a matter of placing the G2 Server Icon in the Startup folder in the start menu. To do this go the start menu, programs, Gravimetric Gateway and right-click on the G2 Server icon and click copy. Then go to the start menu, Programs, Startup. Right-click in the startup folder and click paste. This will start the G2 Server when the computer has booted up.

Q. Why is it that when I run a report for a single day, some material usage data is included from the following day?

A. Most likely this is due to the "End Of Day" time set in the setup screen of G2. In Setup you may set the time that will determine the "end of day" time for report generating. The "end of day" time works like a retrieval time however what sets it apart from a retrieval time is that the "end of day" time will determine the ending time of a generated report. It is important to understand that the "end of day" time is not necessarily the end of the 24-hour day but rather the end of the last shift of the day, which in some cases will extend into the next physical day on the calendar. An example of how the "end of day" time will work would be as follows. If the last shift of a day (3rd shift) starts at 11pm and ends at 7am the next morning, then the "end of day" time is set to 7am. A report that is generated for a single day would include the entire last shift that extended from 11pm into the next morning ending at 7am the following day. Material processed during most of the 3rd shift was actually processed during the next day on the calendar but is included in the report because the "end of day" time. If day to day reporting is to be generated based on the calendar days and not to include a shift, which overlaps dates, leave the "end of day" time set to 12:00 AM.

Q. When I start the G2 Server or the G2 Client, I receive a Windows error message regarding my video display and/or color (or the Server and Client simply don't start). Why?

A. In some cases this is due to the video drivers not meeting the minimal graphics requirements for G2. The minimal requirements are 256 color and 800 x 600 monitor resolution. If your graphics are below these requirements, the G2 Server may not open or you will receive a warning message, depending on your operating system. A Windows 95 or 98 system will may display a warning message while a Windows NT system may possibly not allow the G2 Server or client to open. This depends on the graphics adapter you have. In either case, it is recommended that the minimal graphics requirements are met to avoid display type issues.

Q. When installing the G2 software on a PC with Windows NT or 2000, the error message "Severe: Failed to Create Program Folder" occurs and installation is halted.

A. Resolution:
This problem is corrected by logging out of NT and back in as Administrator, or someone with Administrator privileges on the PC and perform the installation again.

This error occurs when a user without administrator level rights attempts to perform the installation. Under Windows NT or 2000, only users who have administrator level rights are allowed to create common program objects. Since G2 creates a common program folder during installation, administrator level rights are required.

If the above questions and answer did not help resolve you problem, follow these steps to help us assist you in resolving the problem:

1. **Upgrade to the latest version of G2 free of charge**

   Upgrading to the latest available version of the G2 software solves many problems. Upgrades are available free of charge from the Maguire web site. Check the version of your software by clicking the *About* box under *Help* in the menu of the G2 Client software. If a newer version is available, follow the instructions on updating G2 online when downloading the latest version.

   http://www.maguire.com/g2/downloads.htm

2. **Contact Us Directly** - If you wish to report a problem with the Gravimetric Gateway® Server/Client Software, you may contact Maguire Products directly via telephone. Support is also available over the Internet at: http://www.maguire.com/ or email g2@maguire.com.

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