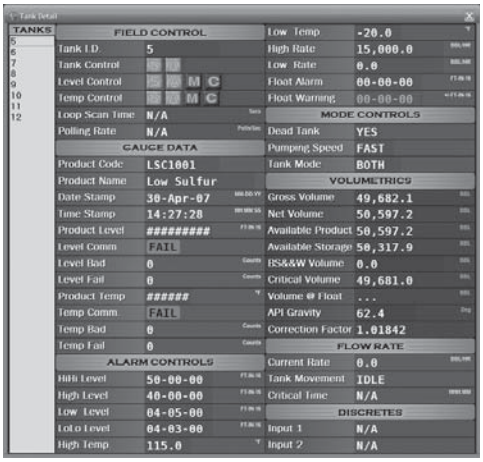
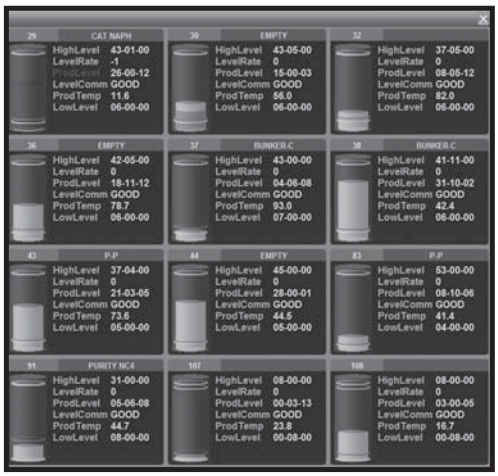
MCG 3900 Inventory Management System

The L&J Engineering WINGauge Version 5 Inventory Management System is the latest in a long line of tank gauging and inventory control and management products from L&J Technologies Inc. As a state of the art Microsoft Windows application, WINGauge offers multi-protocol, multi-loop, real-time gauging of an unlimited number of storage tanks, covering the entire spectrum of storage facilities.

Version 5 was developed with flexibility in mind and the end user can easily customize and fine tune the visual displays with WINGauge's Dynamic Form Generator, customize printed reports with the Dynamic Report Generator, and easily setup communication with your gauging products using the Advanced Gauging Module. Advanced client/server technology and high-reliability multi-server functions are available off the shelf, as well as numerous database and external connectivity features.



Tank Detail



Real-Time

Features

- Customizable Graphic User Interface
- Multi-Loop/Multi-Protocol/Multi-Vendor
- Monitors up to 1000 Tanks on 32 loops
- Multi-Server / Multi-client / Multi-field
- Supports L&J S.M.A.R.T Diagnostics
- Supports Non-L&J Gauges & Protocols
- Sophisticated Connectivity Features
- Plug-in Software Expansion
- Multi-Media and Relay Alarm Outputs
- User-Definable Printed Reports
- Printed Alarm and Inventory Reports

Applications

The MCG3900 WINGauge and L&J field gauging equipment are installed in a variety of industries worldwide.

Petroleum	Refineries	Pharmaceutical
Petrochemical	Chemical	Food & Beverage
Water Treatment		Bulk Liquid Storage

Software Features & Functions

Flexible User Configuration

Desktop Layout, Background, Form Design and Printed Reports,
Field Loop Interface Control
Client/Server Operation,
Communications Protocol,
Software Plug-ins,
Host Communications,
Alarm and Tank Movement Colors,
Group/Product Codes may be remotely updated via network.
Screen and Report layouts may also be remotely updated.

Dynamic Forms Generator

The system administrator may easily modify the default displays, or even create custom data-entry and tabular display forms. Forms automatically scale to the current screen resolution. Global color *themes* are also supported.

Dynamic Report Generator

Version 5 now has the capability for producing custom printed reports. Using the same technology as the Dynamic Forms Generator, completely user-designed report layouts may be developed and installed into the main program's menus and toolbar. This flexibility allows the MCG3900 to easily handle reporting requirements not accommodated by the standard report library.

Dynamic Menu & Toolbar

The pull-down menu system and toolbar configurations may be modified at any time by the administrator. Updates to these crucial user interface functions can even be made remotely via a local-area network (LAN) or the Internet.

SiteView Display

Version 5 supports a brand-new user-programmable SiteView display. This scrollable, zooming bird's-eye view of a facility provides a complete real-time graphical view of tank levels, temperatures, and alarm status. Site graphics may be provided in .BMP or .JPG graphic formats, and may consist of satellite imagery, CAD or scanned artwork, or even a hand-drawn picture. Virtual tank objects can be applied to each image, using standard drag-and-drop techniques. Multiple views of different portions of a particular facility (or even multiple facilities) may be displayed simultaneously on-screen.

Trending Display

Archived (historical) tank data may be viewed using the Trending Display. This color-coded display will graph multiple data items simultaneously, and a mouse-based pointer system allows the operator to determine the values of the selected data items at any point on the graph, and the time at which the values were acquired. Trending data is stored in a Microsoft Access-compatible database.

Advanced Gauging Module

The Advanced Gauging Module is a key component of the MCG3900 WINGauge. It manages *all* communications to field equipment and host system devices (such as a DCS or mainframe computer) and provides precise control of field operations. Up to 32 field loops are configurable for simultaneous gauging with any of the supported protocols, and RS485 two-wire multidrop mode is supported.

Interface Device Types:

COM port
USB port
Auxiliary Port
Multiport I/O
RS-485

Communications Parameters:

Data rate (110 bps to 115 Kbps)
Parity (Odd, Even or None)
Auto-retry (0 to 255 retries)
Intergauge Time (0-5000 ms)
Interpoll Time (0-5000 ms)
Gauge Latency (0-500 ms)
Recycle Time (0-10 seconds)
RS-485 Multidrop Mode
Port Address & Interrupt (optional)

Communications Protocols:

L&J Tankway (32nds)
L&J Tankway (Graycode)
GPE 31422/31423
RGL
Modbus
*Others Available**
**See Ordering Guide for complete options.*

Field Diagnostics

For L&J gauge types that support remote field diagnostics (all SFI-series products, including the MCG1600SFI radar gauge) WINGauge will provide both live and historical diagnostic data. This includes, at a minimum, polling rate and loop scan time, field and gauge CPU power, memory status, live and accumulated communications status and many, many other useful pieces of information all relating to the quality of acquired product data and overall gauge field integrity.

Storage facilities using non-L&J equipment can also benefit from this capability, as field communication status is continuously monitored and logged by WINGauge. Fault information is accumulated and made available for display.

Advanced Network Module

All WINGauge network services are routed through the Advanced Network Module. WINGauge systems which are configured as gauge servers use the ANM to provide data services to remote networked client systems. In addition, this module supports high-reliability gauging with automatic failover to a live backup server (this requires the MCG3901 Automatic Switchover Unit.)

Another powerful capability of the ANM is Multifield Integrated Gauging. When operating in this mode, live data from multiple remote gauge servers is integrated into a single composite view. Multiple tank farms can be monitored simultaneously, as if they were a single facility.

Standardized Releases

All WINGauge customers at a given software revision level will receive the same production program code. Clients and servers differ only in their configuration and setup: the actual executables are identical. This is very helpful for license auditing requirements and system upgrades.

Plug-in Module Support

Unique, site-specific, or otherwise non-standard features are typically implemented as a WINGauge Plug-in module. Plug-ins are separate executable modules that are loaded automatically by WINGauge upon system startup. Plug-ins can be added at any time after a system has been installed, and provide a way for a customer to leverage customized features even as the main program is revised or upgraded.

Full-Screen Kiosk Mode

Often it is desirable for a client system to function as a mere data terminal: that is, the user should not be allowed access to any Windows applications or features other than WINGauge itself. Kiosk mode hides the Windows Start Menu, System Tray and Task Bar and allows WINGauge to control the entire desktop.

Access-Control System

WINGauge sports a complete user & group based access system. Users are assigned to functional groups (for example, *maintenance* or *operators* or *administrators)* and access to specific system functions is controlled via administrator-assigned passwords. Furthermore, access can be controlled right down to the level of individual data entry fields (e.g., level, temperature, gauge type, etc.) Access timeouts can be specified on a user or group basis: the system will automatically log off an inactive user to help prevent unauthorized use.

Tank Simulator

Systems which are supplied with the Tank Simulator plug-in will have an extra communications protocol available called *simulated.* Any tank which is set to *simulated* will begin to generate slowly varying levels and temperatures. Alarm generation will occur, and trending data will be stored as well. This is very useful for initial evaluation of the WINGauge product, and also for training operations personnel without having to generate events using live gauging.

Alarm Outputs

When specific alarm conditions occur, WINGauge will generate appropriate alarm sounds. If the system (client or server) is multi-media equipped and has speakers, one of three alarm sounds will be produced depending upon the severity of the alarm condition. These alarm sounds are stored as standard Windows .WAV files and may be customized.

If the gauging server is equipped with an MCG3281 Mini-FIC, WINGauge may be optionally configured to trigger the 3281's alarm relay output when an alarm condition occurs.

OPC Server

WINGauge now supports real-time OPC operation. WINGauge functions as a standard OPC 2.1-compliant server. This allows any OPC client with proper authorization to access live gauging and configuration information from any point on a LAN or the Internet.

Remote Configuration

All writeable data fields within the WINGauge system can be remotely updated via the Automatic Configuration Importer plug-in. This is very useful for system administrators who want to modify the system configuration in real-time without having physical access to the server.

Tank Transfer Monitoring

Operators may use the system to monitor product transfers between tanks. Completion of a transfer is automatically determined by the system, and can be programmed to terminate based upon volume transferred or actual volume, as well as running time and ending time, in any combination.

FastGauge High-speed Polling

Where it is important to more precisely quantify the contents of a tank that is in motion, a new high-speed polling mode (FastGauge[tm]) is available. This mode allows up to five tanks to be polled at a substantially higher rate, while simultaneously continuing regular polling of gauges that are not in FastGauge mode.

Database & Connectivity

WINGauge offers numerous connectivity options for accessing live and archival information. In addition to the various plug-ins available for serial and network connection to host system and DCS equipment (i.e., OPC, Modbus, TopTech, Emark, and others), WINGauge also has options to output data in text, Microsoft Access, XML, HTML and several other formats. Custom drivers can be developed for any host communication needs not served by the existing library.

During normal operation of a WINGauge server, a Microsoft SQL or Access compatible database is generated after each field scan. One record exists in this file for each tank that is scan-enabled, and each contains over two dozen data fields, ranging from the current product level to the previous day's stock data. This file will never contain more than one record per tank.

A second database file is generated that *is* intended for long-term storage of tank gauging data. This file is required by the trending graph display, but may be accessed directly by the user. The user may configure the maximum number of days that will be stored in the file, and the interval at which new records are written, and the specific data fields that are to be stored. This capability is very useful for fulfilling both operational needs and legal documentation requirements.

Help System

The entire user's manual is available in the online help system. This help system provides a wealth of information about the operation and use of the WINGauge gauging system. It is primarily intended for operations and maintenance personnel, and does not include documentation on advanced administrator-level functions.

The Standard Package Includes (But is Not Limited to) The Following Features:

Alarm Generation

Level	HiHi	High	Low	Low-Low
Temperature	High	Low		
Rate	High	Low		
Float				
Movement				
Communications				
Discrete Inputs				
Color Controls				

Volume Configuration

API Table	Strapping Table	Outage Mode

Volumetrics

Total Capacity	Available Product	Available Storage
BS&W Volume	Bottom Volume	Gross Volume
Net Volume	Volume Correction Factor Density	
API Gravity		

Levels

Product Level	Level SoftCal	Level Offset
BS&W Level		

Temperature

Product Temp	Temp SoftCal	Temp Offset

Flow Rate

Current Rate	Critical Time	Rate Interval

Floating-Roof Correction

Roof API	Upper Critical Zone	Lower Critical Zone
Delta Volume		

Tank And Host Communications

Gauge Address	Gauge Type	Loop Number
ModBus I.D.	Tank I.D.	Discrete Input 1
Discrete Input 2	Communications Status	Field Loop Status

Tank Activity And Movement Detection

Tank Movement	Level Active	Level Inactive
Time Active	Time Inactive	

Report Generation

Group Code	Product Code	Product Name
Inventory	Product Summary	Tank Summary

Advanced Diagnostics (SFI-Series Gauges)

CPU Voltage	CPU Temperature	Emitter Current
Encoder Status	Field Voltage	Memory Status

MCG1600SFI Diagnostics

Over forty real-time data items are available from the MCG1600SFI via WINGauge. This provides the control-room technician with a detailed view of the remote radar gauge's operation and programming.

Standard System Screens

* Active Tank
* Alarm History
* Alarm Summary
* Communications Fault
* Communications Log
* Conversions
* Group & Product Codes
* Fast Gauge
* Group Summary
* Group Summary Graph
* Online Help System
* Inventory On Hand
* Level History
* MCG SFI Series Diagnostics
* Volumes & Rates
* WinFlash
* Real Time Graphic
* User Administration
* Servo Gauge Control
* SiteView
* Software Calibration (Softcal)
* Strapping Tables
* System Configuration
* Tank Configuration
* Tank Detail
* Tank Groups
* Tank Parameters
* Tank Summary
* Tank Trending
* User Login
* Operator Log

MCG 3900 Tank Gauging System

Includes:

- Windows Based System
- 4 GB RAM Minimum
- 160 GB (or larger) Hard Drive
- 24'' LCD
- Mouse
- Keyboard
- Gauging Software Package