Automate & optimize terminal loading operations

TerminalManager™
Emerson’s next-generation Terminal Management System (TMS) for the automation of terminal operations
Instead of dealing with frequent delays and a lack of critical information, what if you could achieve greater visibility to terminal activity, enhance customer communications, and streamline operations to safely maximize terminal throughput?

Without the optimal use of information and assets, your terminal risks falling short of throughput targets and increasing customer complaints. As your terminal expands, these challenges will be exacerbated by a greater number of products, leading to more tanks, complex routing and blending, and heavier vehicle traffic. Meeting customer and market requirements will be dependent on how well you manage, organize, coordinate, and control the people, equipment, technology, information and other resources needed to move product into, within and out of your terminal. A robust, scalable operations management solution that allows you to efficiently use your assets while maximizing throughput will ensure your operation remains competitive and profitable well into the future.

Lack of automation and optimization can easily add twenty minutes or more onto each truck turnaround, impacting customer satisfaction and terminal throughput.

Manual processes and tracking/correction of loading inaccuracies can require an additional FTE to verify and calibrate at a cost of >$75K US per year.

Frequent scheduling delays and bottlenecks can lead to the loss of both suppliers and customers.

You are experiencing increasing challenges to meet customer demands and maximize terminal throughput.
TerminalManager™ streamlines terminal operations in a single software platform.

TerminalManager™ is Emerson’s built-for-purpose Terminal Management Solution (TMS) that ensures efficient, accurate, safe, and secure material transfers for both manned and unmanned tank storage facilities. This complete solution will help you optimize handling of both inbound/outbound movements and related internal activities. Whether you operate an unmanned, single bay crude unloading facility or a massive chemical refinery terminal with hundreds of complex products, TerminalManager is a scalable, highly reliable solution that is appropriate for terminals of all sizes.

In a world of data, make the most of it.
TerminalManager provides out-of-the-box connectivity to a host of physical devices and includes MessageBroker for software integration with any third party solution, enabling seamless consolidation and disbursement of your critical data.

Streamline loading and unloading operations.
TerminalManager streamlines the management of all aspects of product transfers and material movements for truck, railcar, and barge loading/unloading.

Gain total visibility to all aspects of terminal management.
TerminalManager provides a complete overview of your terminal, enabling all personnel to monitor critical activities across your facility. The system is a single source of data for movements, real-time load rack visibility, inventory positions, and physical stock on hand. Alerts and alarms are always visible for swift action and resolution.

Ensure safety and security, the #1 priority.
When dealing with hazardous products and situations, keeping your people and the environment safe is paramount. From authorizing site access for approved personnel to ensuring all loading permissives are in place (i.e., overfill protection or ground), TerminalManager helps you maintain safe operations and remain in compliance.
TerminalManager — your solution to maximize the efficiency, productivity, and profitability of your terminal operation.

Master Data Management
Data sources are plentiful: products, recipes, tanks, devices, suppliers, customers, carriers, vehicles, drivers and more. Managing all of these data elements is critical for performing both site operations and integrating with other systems.

TerminalManager stores all critical master data and can sync with other sources if a centralized system of record is needed.

Planning & Scheduling
Trip efficiency and maximum use of terminal assets is important for best-in-class terminal operations. Planning ahead of truck arrivals and movements helps in-terminal traffic congestion and prevents any safety breaches. In addition, scheduling and prioritizing gantry usage guarantees gantry and product availability.

TerminalManager has the tools to both plan ahead and optimize gantries on arrival.

Site Safety & Security
Entry and exit points for trucks need to be safe and secure. Security includes driver validation, truck and carrier validation, stock validation and availability, customer allocation, and reporting.

TerminalManager secures terminal access by validating drivers and trucks before granting entry.

Loading/Unloading Execution
Once a truck/railcar is at the gantry, it is important all controls are validated and in place before a movement is authorized. Knowing the proper amount to load avoids overfill and knowing which product was previously in the compartment avoids contamination. Robust communications with preset batch controllers provide real-time knowledge of batches in execution, enabling appropriate action when alarms occur.

TerminalManager works with a variety of preset batch controllers for ultimate performance and flexibility.

Measurement & Custody Transfer
When processing a vehicle Bill of Lading (BOL) or a tank ticket for bulk movement, accurate measurement is absolutely critical to ensure precise custody transfer recording and inventory transactions. Terminal customers expect quality measurement according to accepted standards such as ASTM/API.

TerminalManager and the preset batch controllers calculate standardized results according to published and accepted global standards.

Inventory Management
Managing inventory accurately is a primary customer concern. Inventory balancing, reconciling book stock against physical stock, and re-adjustment before close-out are recurring needs. Managing gain/loss across inventory requires flexibility.

TerminalManager has all the tools to manage and report inventory accurately.
Gain Total Visibility to All Aspects of Terminal Management.

Terminal operators need to know what is happening in the facility, day and night. Whether a driver is having difficulty entering the facility, a weight is out of tolerance, or an alarm has activated, you need this information to be available and visible. With TerminalManager, your staff will receive timely notifications and can take quick action and get resolution, minimizing the impact to your terminal operations.

What’s your challenge?
Lack of visibility into the terminal processes and assets requires manual activities and work-arounds. These manual steps either require additional manpower or take skilled terminal personnel away from high-value tasks.

What’s your opportunity?
Employ a Terminal Management System (TMS) to consolidate information, standardize and automate processes, issue an alert when manual intervention is required, and close the accounting process quicker.

Achieve Full Visibility with a Single Application

Operations Management - From gates to gantries, give operators in the control room a remote, site-wide view to control loading activities and ensure materials are moved safely, accurately, and on time.

Intenet Portal - Operators can view orders, BOLs, inventory, and reports from anywhere, anytime with a browser and corporate network access.

Double Vision - Operators can watch in real-time as drivers interact with Human-Machine Interfaces (HMIs) as messages are dispatched from TerminalManager.

Efficiently Manage Product Loading/Unloading Operations

Stock Check - With a TMS that monitors and calculates the quantity available to load and available space in the tank, checks can be done when planning and prior to loading authorization.

Blending & Additization - Handle all aspects of recipe management for sequential and ratio blending plus add one or more injected additives at the gantry, with alerts generated if blend ends out of tolerance to catch the issue before the vehicle departs.

Reconciliation - Easily compare book and physical inventory positions. Catch small losses before they become larger and track how gains or losses match up with contractual loss allowances. Create book adjustments to true up book to physical position.

Stock Accounting - Track all movements in and out of tankage, whether captured by a preset batch controller, manually entered, or brought in via another interface for either a single supplier (dedicated) or multiple concurrent suppliers (comingled).

BOL Printing - Capture volume and weight automatically on the BOL form of your design. Printing can be triggered automatically or done in a secure manner to ensure drivers can only retrieve their respective documents.

Account for Product and Optimize Invoicing

Timely Invoicing - Close the books faster with accurate, real-time transaction updates from your TMS to your accounting system. With real-time data, you can invoice customers quicker and with greater accuracy.

INVOICE

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Streamline Loading and Unloading Operations.

Without operational visibility, managing assets can be time-consuming and introduce delays that impact terminal throughput. TerminalManager gathers and consolidates real-time data and delivers the information to personnel within the terminal to identify constraints and ensure their awareness of the conditions. Our system also allows operators to easily perform scheduling and slot booking to prevent crowding, minimize back-ups, and prevent delays. Optimal gantry usage ensures products being loaded are delivered accurately and on time, improving terminal throughput.

**What’s your challenge?**

Vehicles need to move through the facility as quickly and efficiently as possible to prevent backups and delays.

**What’s your opportunity?**

Reduce the delays that impact terminal throughput by removing manual processes and improving planning/scheduling, real-time load rack visibility and asset usage.

**Effectively Plan and Schedule Terminal Loading/Unloading Activity**

- **Time Slot Booking** - Planning is essential to guarantee on-time delivery which is why TerminalManager provides a slot booking tool that allows booking and enforcement of truck loading times, avoiding delays at the terminal.
- **Bay Queuing** - When a truck arrives, our TMS can automatically assign the optimal bay and informs the driver where to go, avoiding traffic congestion at the bay and optimizing use of the asset.
- **Traffic Management** - Terminals often have limited space to handle trucks onsite. The system’s Slot Booking and Bay Queuing are effective tools for controlling vehicle traffic, improving truck turnaround time and reducing safety incidents.

**Use Tailored Workflows to Minimize Manual Processes and Delays**

- **Entry Gate/LAN** - Before granting a driver/vehicle access, the TMS can ensure the driver’s license and training is up to date, validate an available order, and also provide printed information at the gate to help drivers efficiently navigate the facility.
- **Configurable Sequences** - Make sequences (entry/exit, weigh, gantry loading, etc.) as compact or complex as desired and tailor for direct driver interaction or for an operator. Use similar sequences in other operations for user familiarity and repeatability.
- **Smart Scales** - Store vehicle tare weights and compare to actual in-weights with out of tolerance weight generating an alert to prevent loading over top of an unexpected heel. To-load weight is recalculated per in-weight to mitigate overloads.

**Optimize Facility and Personnel Utilization**

- **Asset Utilization** - Achieve maximum usage of all terminal assets such as pumps, meters, valves and gantries by tracking all activities and utilization, ensuring operators have valuable information to optimize product movements.
- **Limit Downtime** - A running site is a utilized site. Our robust TMS minimizes manual operations and avoids any re-work. Multiple redundancy options, from cold standby to a fault-tolerant hot standby, offer ultimate uptime.
- **High Value Tasks** - With process automation and optimization routines, a site can run with fewer personnel — and in some cases, unmanned. Eliminate manual processes and allow operators to focus on planning and scheduling to improve terminal efficiency.

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In a World of Data, Make the Most of It.

Without centralized visibility into complex terminal data, activities, and transactions, your personnel must put additional effort into gathering that information. Collecting and aggregating information from a variety of sources and processes—often with manual data recording/transfer—could lead to transactional records that are fraught with errors and losses. TerminalManager ensures all critical data is captured and managed in a single system to streamline record keeping and expedite the invoicing process.

Put Key Data at Your Fingertips

Master Data Management - Easily and accurately consolidate transactional data from multiple sources to create a single view of the terminal using master data elements that allow for centralized data management locally or via an enterprise application.

Audit Trail - Capture and archive audit information for every event that can be accessed as needed for further analysis to help quickly resolve customer disputes.

Data Management - All data is archived and available to the customer. Daily, weekly, monthly, annual, and YTD transactional data are available at all times. Pricing and charges are available for accurate invoicing.

Audit Trail

- Capture and archive audit information for every event that can be accessed as needed for further analysis to help quickly resolve customer disputes.

Streamline Distribution of Critical Terminal Data

Automated Report Distribution - Group, configure and email reports to one or more distribution groups that include internal and/or external parties. An entity parameter ensures external reports are pre-filtered to company-specific data only.

Driver Performance - All driver-related events are timestamped and archived. Measure and report performance to carrier and/or customer with details such as truck turnaround time, driver training compliance, and upcoming license/registration expiry.

Integration to Automatic Tank Gauging (ATG) - Seamlessly connect to Rosemount™ TankMaster, Rosemount 2460 Hub, and other third-party ATG solutions to capture, view, and report tank data directly in the TMS application.

Integration to Control Systems - Our TMS supports OPC connectivity to control systems, including Emerson's DeltaV™ and OpenEnterprise™ SCADA. Additionally, DeltaV can also be leveraged as a virtual preset batch controller.

Integration to Synthesis™ - TerminalManager is designed to seamlessly communicate with Emerson’s Synthesis Order-to-Cash Software for management of multiple terminals via a single, centralized enterprise system.

What’s your challenge?

Your information is trapped in disparate and disconnected systems, making it necessary to rely on manual processes and manual data entry for workarounds.

What’s your opportunity?

A single, integrated repository for inventory transactional data ends the search for missing records. With a full complement of transactions from an array of sources, the system can accurately manage supplier book stock and perform book to physical reconciliation within a single application platform.

Rely on Scalable, Integrated Solutions from Emerson
Ensure Safety and Security, the #1 Priority.

Terminal facilities inherently carry risk, including hazardous product exposure, high pressures and temperatures, and heavy machinery, to name a few. It is paramount that software and hardware solutions work in unison to help reduce these risks as much as possible — with measures such as explosion-proof cases for hardware in C1D1 areas, validating product compatibilities, and protection of sensitive data. TerminalManager is designed to help your operation maintain high safety standards while protecting the security and integrity of your information.

What’s your challenge?

With various safety risks at a site, the TMS must play a key role in preventing and mitigating dangerous situations.

What’s your opportunity?

As a fully-integrated TMS, TerminalManager helps prevent safety issues and can alert personnel of issues before they become more serious.

Keep Your Data Safe and Your Site Running with Cybersecurity

Network Design - Critical for smooth daily operation, TerminalManager’s network design helps minimize vulnerabilities with a separate TMS network and limited/controlled intercommunication with other networks.

System Hardening - TerminalManager systems undergo a standard hardening procedure which includes system patches, unnecessary application removal, appropriate user permissions/access, and penetration tests.

Whitelist and Antivirus - Combine a whitelisting solution to only allow authorized system changes and an antivirus solution to prevent malicious attacks. Add a disaster recovery strategy to fully safeguard your TMS investment.

Automate Access with Site Security Management

Access Control - TerminalManager supports automated entry and exit from a terminal site, including gate/alarms activation.

Identification - Positive identification of driver and vehicle can be performed by proximity cards, pin codes, biometric scanners, RFID tags, license plate readers, and more for automation of access control.

Validation - Once the driver and vehicle are identified, TerminalManager can be configured to confirm the driver has not been locked out, his/her driver’s license and training are current, and vehicle registration and insurance are valid.

Load Safely in Hazardous Areas

Explosion-proof - Many products handled in a terminal can create potential explosion hazards. All hazardous-area devices are tested and certified to meet or exceed the safety designation of the area (i.e., C1D1 or C1D2).

Overfill Prevention - Maintain an incident-free operation by accurately tracking product on board and the exact amount that can be loaded based on compartment capacity (physical overfill protection devices are still required).

Contamination Control - The TMS tracks the material/material group last loaded in a vehicle/compartment and prevents mixing of incompatible materials to prevent contamination or a dangerous/explosive mixture.
Find us around the corner or around the world.
For a complete list of locations, please visit us at www.Emerson.com/RemoteAutomation.