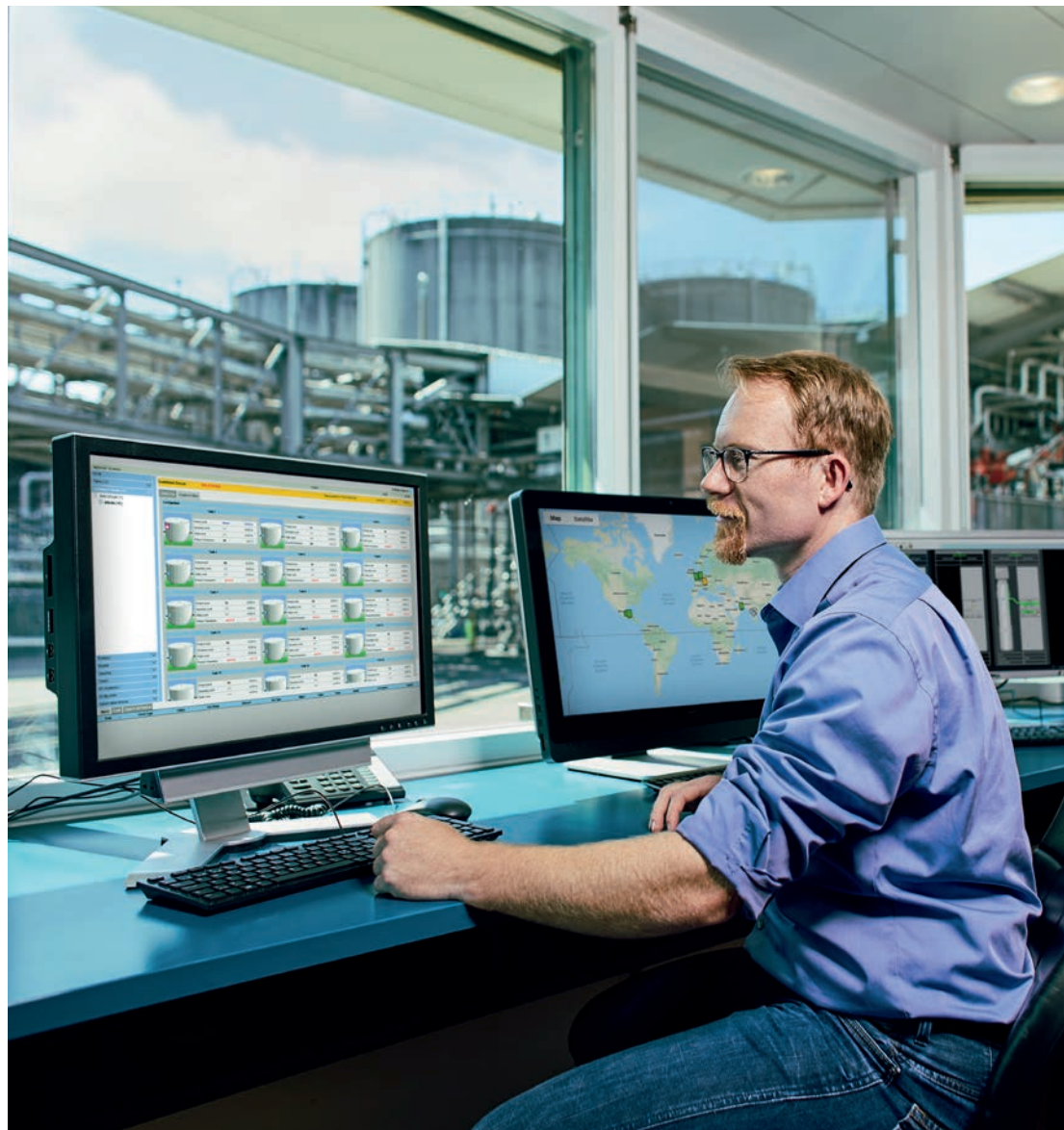


Manage your inventories efficiently

Proven solutions for Transfer,
Storage and Distribution

Inventory Management Solutions



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Endress+Hauser – your expert for process automation



What is Endress+Hauser's complete portfolio offering?

Endress+Hauser is a leading provider of products, solutions and services for industrial process measurement and automation. We have evolved from a supplier of instrumentation to a provider of complete solutions with the goal of serving our customers throughout the entire life cycle of their plants, and of increasing their industrial productivity. Wherever process instrumentation is used in combination with systems, we support our customers in optimizing the economic efficiency, safety and environmental impact of their processes.

This is one of the reasons why we are a leading global provider of measurement, control and automation solutions for process industry production and logistics.



Curious?

www.endress.com



Endress+Hauser is a family enterprise with a staff of 13,300 worldwide and sales of more than 2.2 billion euros.

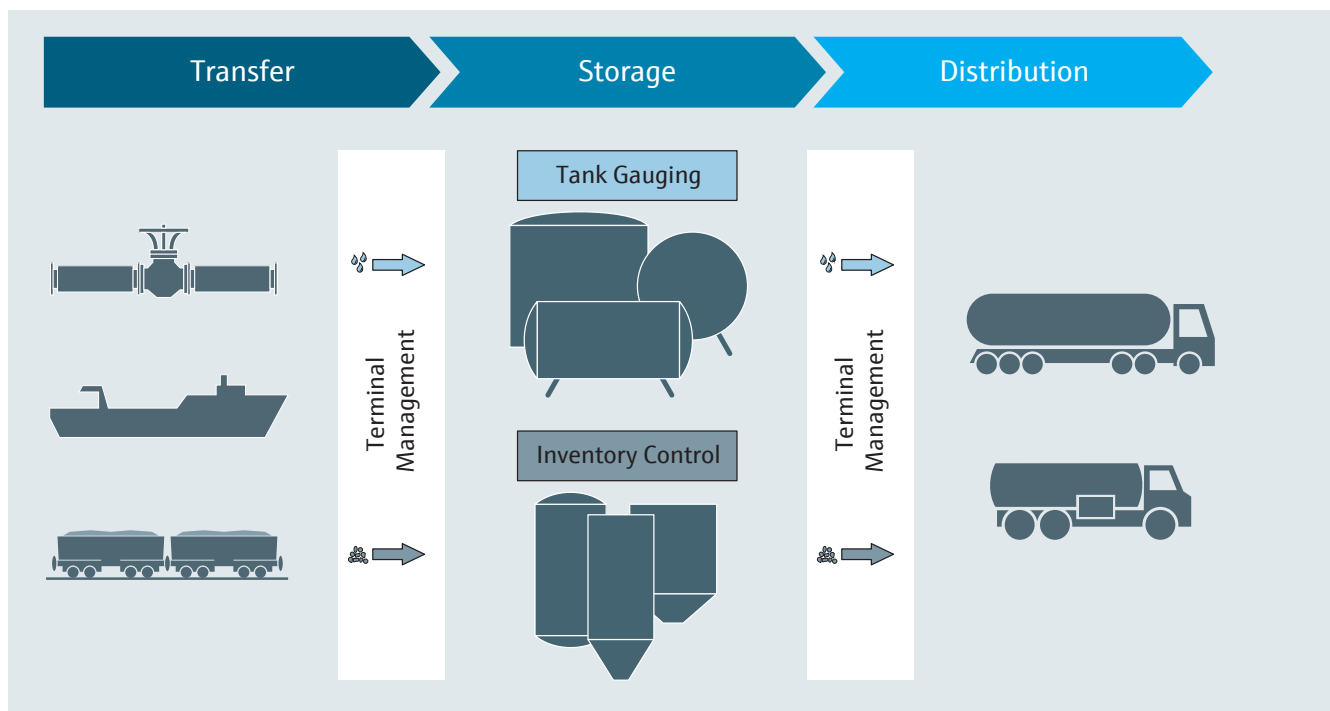
Our global presence with production facilities (Product Centers) in Europe, Asia and the Americas, as well as sales and service organizations worldwide in almost every country, ensures we are in constant communication with our customers. This enables Endress+Hauser to consistently support the competitiveness of our customers with the highest degree of quality, safety and efficiency. Continuous optimization of our processes and the use of innovative technology allow us to push the boundaries of measurement, control and automation engineering.

We, the **People for Process Automation**, assist our customers in finding safe and efficient solutions.

Master your day-to-day challenges in Inventory Management

Operators of tank farms and terminals face many challenges: they need to handle highly valuable products safely and efficiently, and also track capacity and turnovers, monitor quality, prevent overfill, and reduce loading and unloading times. To ensure a long-term competitive advantage, processes need to be flexible and expandable to adapt to new or changing conditions easily. Furthermore, a high standard of safety is required to reliably protect people, the environment and assets.

Endress+Hauser helps you to find answers to today's challenges. From easy monitoring of tank and silo levels through to highly accurate custody transfer Tank Gauging at tank farms and the automation of terminals, our Inventory Management Solutions help you to reduce inventory costs, improve customer satisfaction and increase productivity. Apart from all the relevant measuring technologies, scalable software to monitor your inventories is also part of the package. Furthermore, Endress+Hauser helps you optimize your supply chain with individual IT solutions for Inventory Management and the integration of this data into your company processes and ERP system.



Fields of expertise

Inventory Control

Transparent business decisions based on facts and not on feelings: with our best-fit instrumentation and system components you get real-time measured data and consistent displayed stock values. The combination of hardware and software allows you to keep all inventories visible – you can even centrally monitor multiple plants or sites from the headquarters and increase your visibility over the entire company.

Tank Gauging

When every millimeter counts: we offer solutions to monitor the inventory of your tank with highly accurate and custody transfer certified Tank Gauging systems throughout refineries, tank farms, depots and terminals. Our state-of-the-art solutions with web server technology allow easiest access to tank data and comprehensive data presentation.

Terminal Management

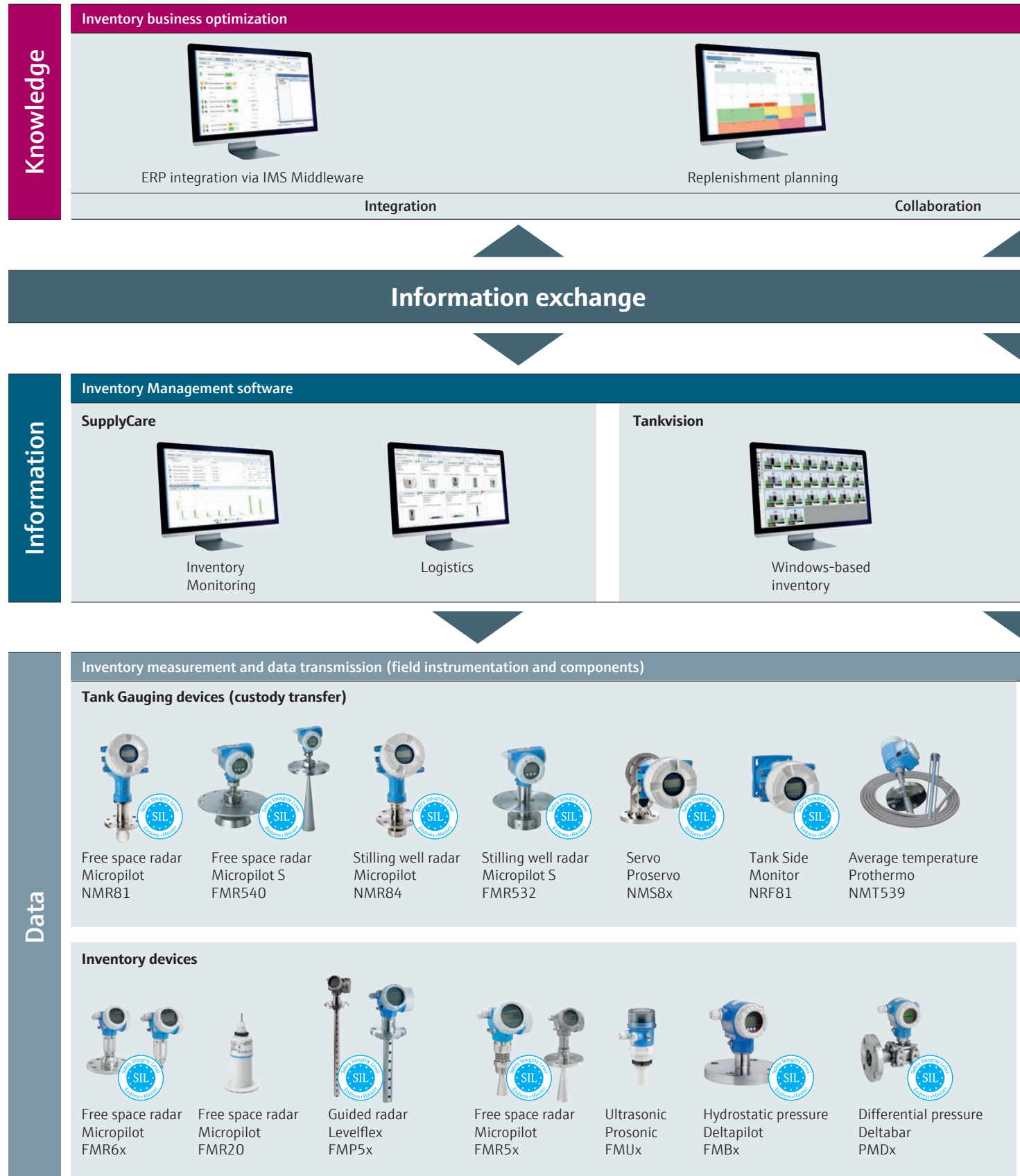
Ship to shore, tank to truck: with our Terminal Management systems, you can efficiently control the distribution of products such as oil, gas, chemicals, renewable fuels and alcohols. Loading and off-loading at terminals require detailed information on quantities and mass. We provide flow measurement and Tank Gauging systems which work together to allow you to manage and optimize your inventory.



Components of Inventory Management Solutions

From sensor to boardroom

Endress+Hauser offers a comprehensive range of measurement instruments, software and solutions. We cover different accuracy and application requirements according to your specific needs. Our tank monitoring or gauging systems include all the elements needed to manage your inventory accurately and safely.



i Focus industries

- Oil & Gas
- Chemical
- Food & Beverage
- Primaries & Metal



Collaboration across the world



Data centralization

Optimization

Information exchange



Web-based inventory

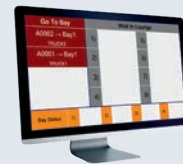


Customized screens

Terminalvision



Terminal management



Queuing module



Self-service kiosk

Data interfaces



Wireless HART Fieldgate SWG70 Gauge Link NXA20 Tankvision Tank Scanner NXA820 Host Link NXA822 Connect Sensor FXA30B Fieldgate FXA42 Tankvision Multi Scan NXA83B

Truck loading and off-loading



Mass flowmeter Promass Batch controller VEGA3 Additional components

Overfill prevention devices (SIL)



Guided radar Levelflex FMP5x



Free space radar Micropilot FMR5x



Vibronic liquids Liquiphant FTLx



Vibronic solids Soliphant FTMx



Capitance Solicap / Liquicap FMIx / FTIx



Overfill Prevention System SOP600

Inventory Monitoring

The foundation for transparent business decisions

Monitoring the content of tanks and silos covers a wide range of applications, with the information used by different groups of people. While operators responsible for loading or unloading need to be constantly aware of changing levels, logistic managers may only need to be updated every couple of days or only when a certain low volume is reached.

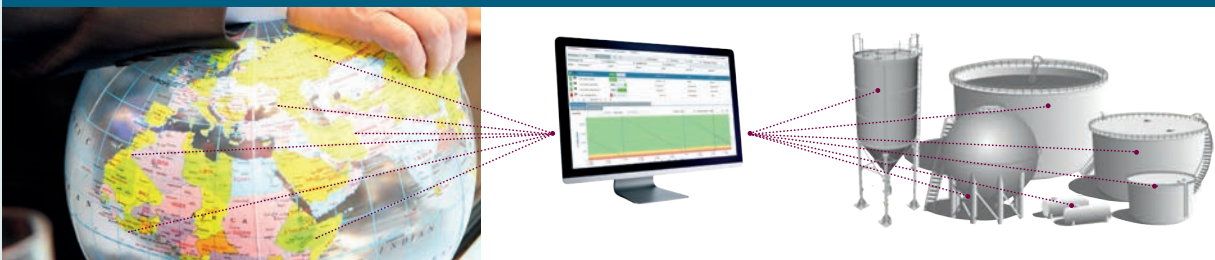
To select the best and most cost-effective measurement and inventory solution, the applications are typically segmented into "Inventory Control" and "Tank Gauging". This is also reflected in the recommendations of the American Petroleum Institute (API), the leading organization for good practice in the Oil & Gas industry.

Inventory Control concerns questions like: Is the right product in the tank? Is it the right quantity? Can I reduce working capital by increasing throughput?

When it comes to Tank Gauging, high accuracy, volume and mass calculations, and compliance with Weight & Measure requirements are typically needed. Weight & Measure comes into play in situations where the B2B trade or custom duties are based on level measurement, and volumes and mass are calculated from the level. This applies to tank farms, where oil and gas is stored, but also in the Food & Beverage industry, where palm oil or alcohols are traded and taxes or import duties have to be paid.

Areas of Inventory Monitoring

"Multiple sites"



Inventory Control



Tank Gauging



"At a plant"



✓ Your benefits

- Accurate, safe and reliable measurement with high-quality products designed together with customers to provide tailored solutions to your process requirements
- Ease of performance in both the components and your plant, leading to savings in both capital and operational expenditure phases of the plant life cycle
- Optimization and reduction of your inventories, thereby reduced tied capital
- Improved material availability and transparent business decision-making

Make the most of your logistic and storage processes

Transfer, Storage and Distribution

From simple monitoring and visualization of tanks and silos through to Inventory Monitoring on a global scale: our modular solutions for Inventory Monitoring guarantee complete inventory visibility 24 hours a day, 7 days a week, anywhere in the world, regardless of whether you need the data at the tankside or in the boardroom.

For effective decision-making, the availability of high-quality online and up-to-date information is essential. Such smart logistic chains offer a fast return on investment (ROI) and help reduce complexities that trouble a large number of companies across various industries. The use of Industrial Internet of Things (IIoT) technology is the perfect way to optimize your logistics and keep your plant operation simple and efficient at the same time.

Transparent decisions

For effective decision-making and improved material availability, high-quality online and up-to-date information is essential.

The right measurement device for any application

Being the expert for level measurement, we offer perfect-fit instrumentation for your particular needs. No matter what you want to measure, we have the right solution for you.

Increased productivity

Increase your productivity with complete inventory visibility 24/7. Our integration capabilities and Inventory Management software solutions enable collaboration between a variety of stakeholders.

Reduced logistics and storage costs

Smart logistic chains lead to savings in capital and operational expenditure phases of the plant life cycle.

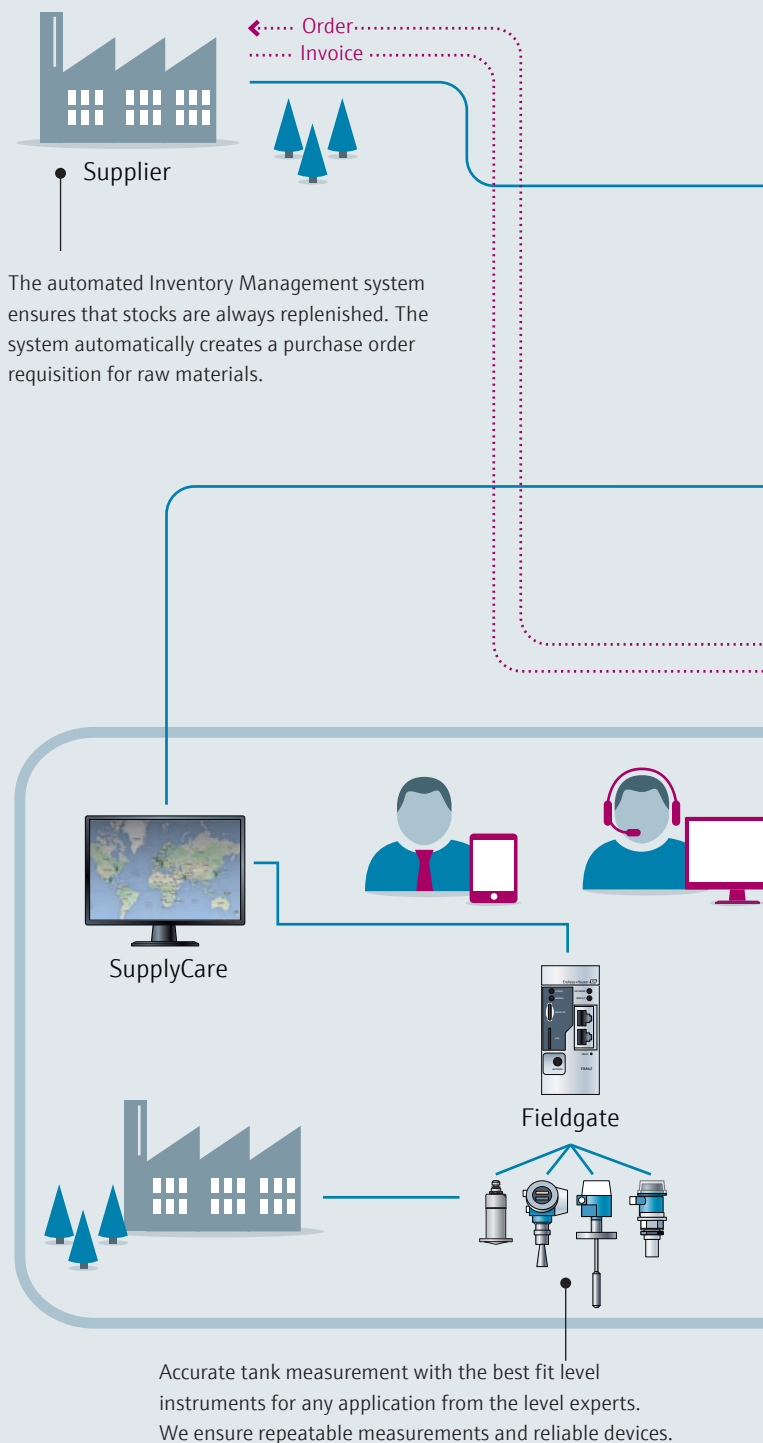
Services and engineering

Our commitment to you is to support, service and optimize your process. Wherever your inventories are located, our global engineering service team of over 1,000 experts ensures active local presence to help you reach your goals.

Sustainable partnerships

By allowing access to online data and enabling automated information exchange, we ensure that our customers act as reliable and flexible partners both for their suppliers and their own clients. We offer a license model, which is not limited to a specific number of users. This makes it possible to involve partners from different entities or companies without having to pay for additional users.

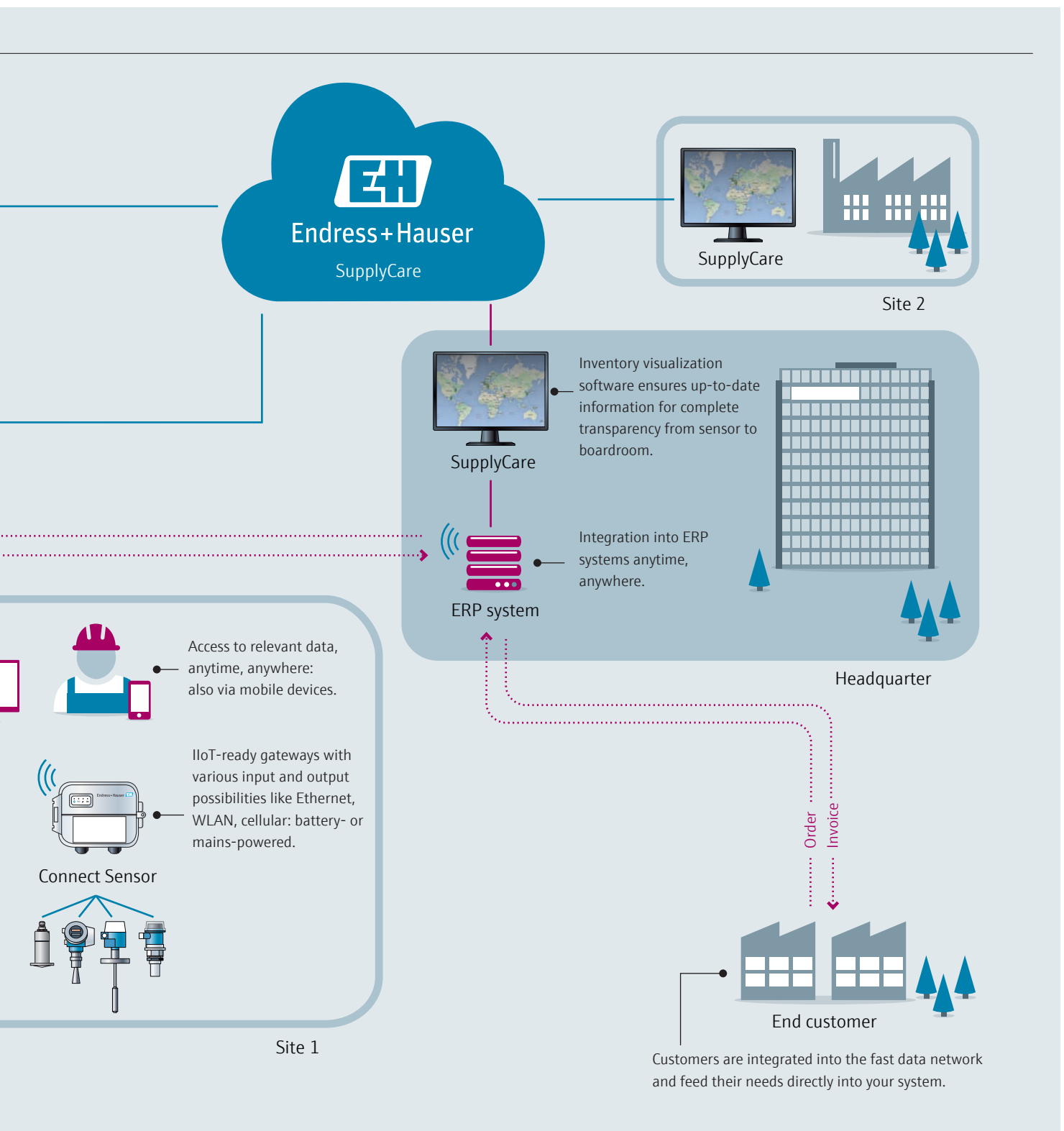
The supply chain of tomorrow





Your benefits

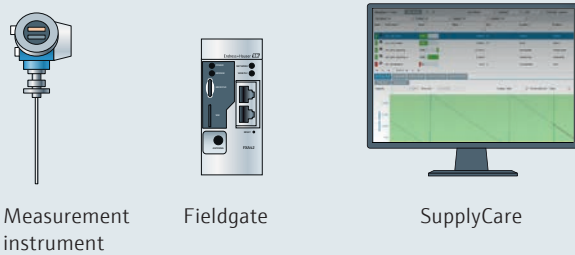
- Transparent business decisions
- Higher productivity
- Increased efficiency and revenue



Solutions to fit specific needs

From simple monitoring and visualization through to complex web-based supply chain systems

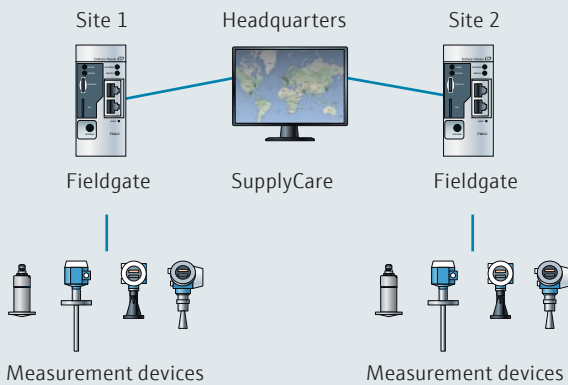
Visualization of tanks and silos



Simple visualization of tanks and silos

For manufacturing companies, it is typical that stock values are not measured and displayed consistently. As a result, inventory data is usually handled manually. Consequences are often data errors as well as the duplication of labor. The upshot is often high stock levels, high inventory costs and decisions that are based on assumptions. Our solutions for Inventory Control guarantee simple monitoring and visualization of tanks and silos to solve cross-industry challenges.

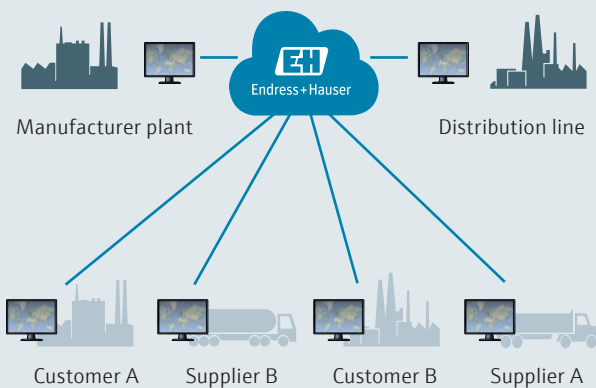
Centralized Inventory Monitoring



Centralized Inventory Monitoring of multiple plants or sites from the headquarters

Nowadays, businesses are exploring new areas due to increasing needs to reduce costs and access new business opportunities. If you can collect real time inventory information across the world, you have the best chance to use existing material stocks and to reduce locked-in inventory costs. Fieldgates and the SupplyCare software provide you with the reliable information you need for in-depth decision-making even across different locations and regions of a company.

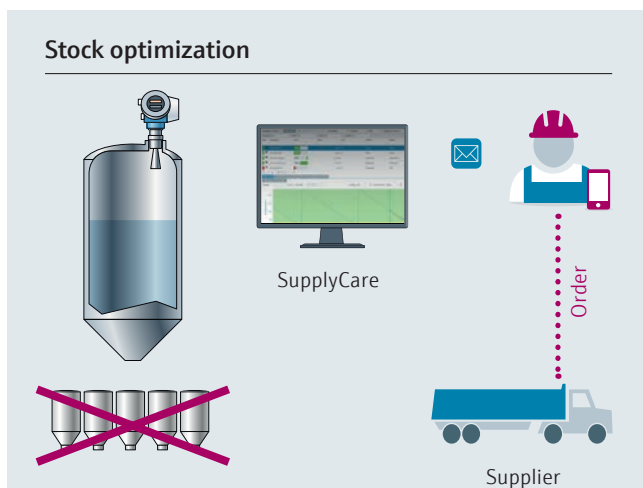
Vendor Managed Inventory



Vendor Managed Inventory

The automation and efficient management of business processes should not be confined to the company alone. By collaborating with business partners, more efficient business models can evolve. One model is a Vendor Managed Inventory (VMI), where the supplier is responsible for the replenishment and delivery of material to customers. The close collaboration involved in VMI requires a high level of trust and understanding between partners. VMI offers great potential for optimization along the supply chain.

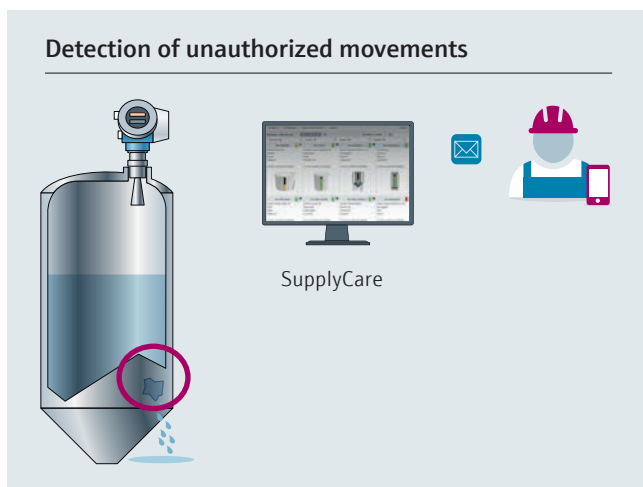
Stock optimization



Minimized stocks and still be able to deliver

While storage costs are a huge factor in our focus industries, the unavailability of product or resulting urgent deliveries are expensive or lead to complete production stoppage in the worst case scenario. SupplyCare can help you to minimize stocks and, at the same time, ensure you are always able to deliver. The system recognizes the ideal point in time to re-order raw materials. If you drop below threshold limits and safety stocks, staff at your company will automatically receive notification messages from SupplyCare.

Detection of unauthorized movements



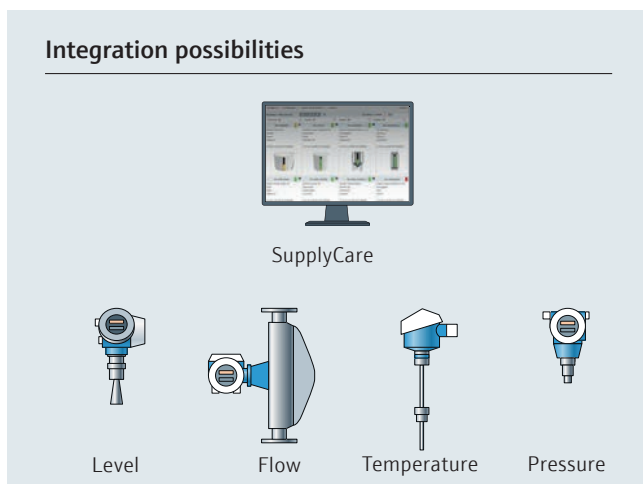
Zero loss with Inventory Control

To ensure zero loss in a company, a transparent overview of the quantities of product “in”, “used” and “out” of the facility is needed.

Our system provides full transparency of the inflow and outflow, supported by key performance indicators and reports.

SupplyCare notices unauthorized withdrawals of products as well as leakages in tanks. If irregularities occur, the system sends alarm messages to defined staff.

Integration possibilities



Integration of process variables

Inventory Control is based on static level measurement. Nevertheless, SupplyCare is flexible to support other important process variables and measurement sources, e.g. temperature, flow, battery status, density etc. The system can visualize up to nine values per tank or silo. Depending on the inventory properties, some media are highly sensitive to environmental influences. Therefore, it is important to monitor certain parameters to ensure they stay within a specific range. This guarantees the quality of the product and the process in the supply chain.

Master product transfers and inventories on a global scale

Transfer, Storage and Distribution

From simple monitoring and visualization of tanks through to management of complex product transfer operations: our modular solutions for Tank Gauging guarantee access to inventory data 24 hours a day, 7 days a week.

Our unique web-based Tank Gauging system offers the flexibility to access the required information from any device (computer, tablet or smartphone) at any time. You can make the right decision - based on real time data available at your fingertips. The system complies with legal regulations and local laws, and is approved with global certifications (NMI, PTB...).

Freedom of choice with regard to the measuring technology

Guided wave radar or free space radar technologies are the best choice for a wide number of tank monitoring applications. On the other hand, servo technology is the best fit when it comes to monitoring LPG or LNG tanks, or when interface and density measurement is required.

Scalable solutions

Terminals, regional depots or small depots for airports and power plants have different requirements in terms of size and availability of data. Our systems can grow with the plant and increase availability with decentralized data storage or redundancy.

Approved systems

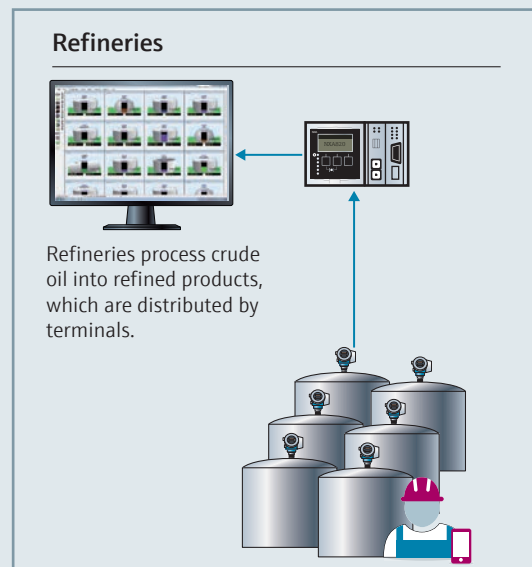
Our gauges and software are designed to comply with international metrological standards (e.g. OIML R85) in the oil and gas market. They are approved and certified by independent Weight & Measure authorities.

Selectable functionality

Depending on the operations on site and the current infrastructure, our systems are designed to fit your specific needs. Topics we address include:

- Simple storage overview
- Volume calculations and corrections, mass calculations according to international standards (API, ASTM)
- Seamless integration of the installed base
- Ship unloading and related product movements on site
- Custody transfer monitoring and reporting
- Safe operation of LNG tanks.

Tank Gauging system

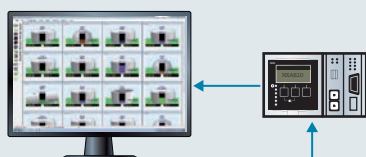




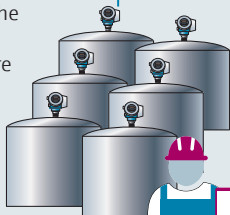
Your benefits

- Safe and reliable custody transfer Tank Gauging through certified high-quality products with highest accuracies
- Step-by-step migration of your plant instrumentation infrastructure and system to state-of-the-art technologies
- Scalable redundancy from instruments to systems

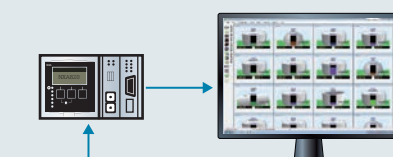
Terminal



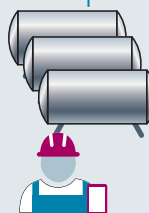
Terminals receive products from different sources (e.g. ships), which are stored in tanks before being transferred to airports, depots, power plants etc. The product transactions need precise monitoring to ensure accurate accounting and efficient operations.



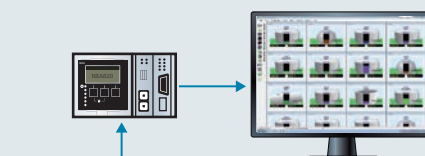
Airport



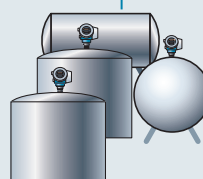
Jet fuel Inventory Monitoring at an airport is critical to avoid delays in refueling the aircrafts and ultimately the flights themselves.



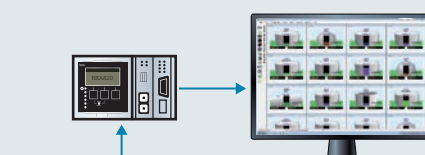
Depot



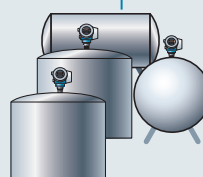
Local gas stations are constantly supplied by regional depots. Monitoring of the depot inflow and outflow ensures smooth, financially optimized operations.



Power plant



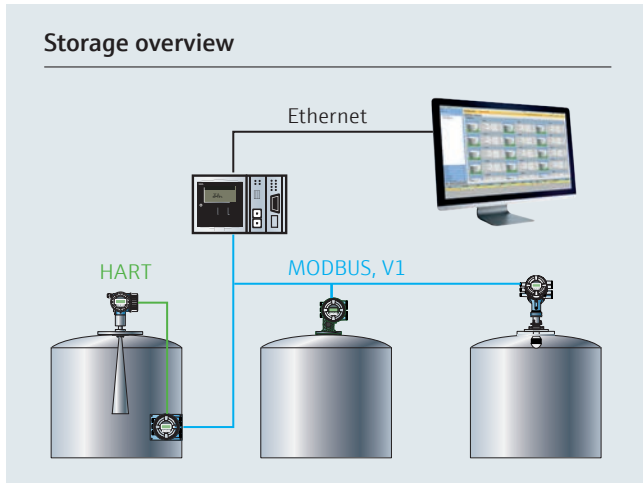
A power plant with constant fuel supply must be accurately monitored so that new deliveries can be planned in time.



Solutions to fit specific needs

From a simple storage overview through to complex and custody approved product transfers

Storage overview

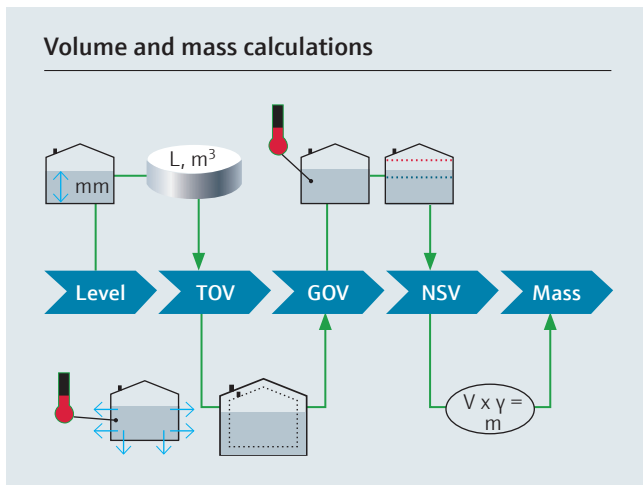


Storage overview

When your priority is to keep track of the amount of hydrocarbons you have on site and the storage space you have available, you need reliable data presented in an instantly readable graphic format.

The product inventories can be displayed in several views and formats on customizable screens and reports. By making this information accessible through your web browser, you actively monitor volumes or mass. This helps you to reduce inventory, lower operating costs and improve your control mechanism.

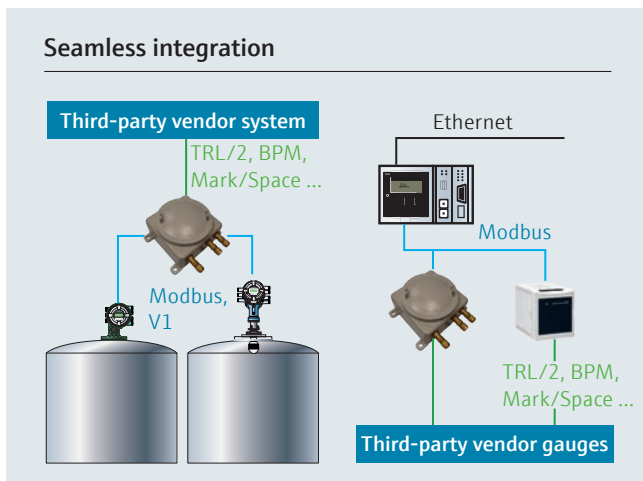
Volume and mass calculations



Volume and mass calculations

Tankvision offers all volume and mass calculations according to international standards (API, ASTM) for pressurized gas as well as for edible oils, alcohols or chemicals. Such products are subject to significant volume variation when the temperature changes. Accurate temperature compensation enables comparable inventories regardless of seasonal temperature influences.

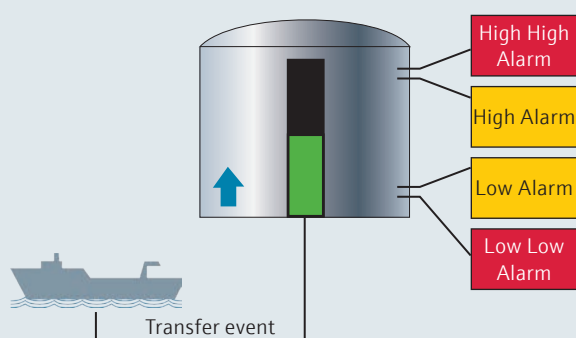
Seamless integration



Seamless integration

Due to extended cable length and special data transmission, Tank Gauging suppliers have used open protocols like Modbus or HART for many years, but also offer proprietary solutions for longer distances or low quality cabling. With the ongoing need for such protocols, we give particular consideration to the best way migration can be managed. We integrate the existing installed devices in order to offer step-by-step modernization of tank farms. The integration of third-party protocols is also supported. Endress+Hauser instrumentation can be integrated into other systems and other vendor gauges can be connected to Tankvision.

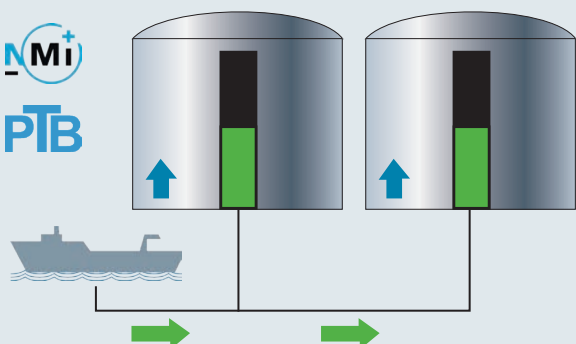
Ship unloading



Ship unloading

The movement operation allows the comprehensive planning and safe operation of liquid loading and off-loading to and from tanks. Each product movement is planned and monitored under its specific conditions. Flow limits are respected and an automatic movement report can be generated. To guarantee a safe process, customized filling alarms can be set. The intuitive overview of scheduled, ongoing and concluded movements provides records to keep track of movements at the terminal and tank.

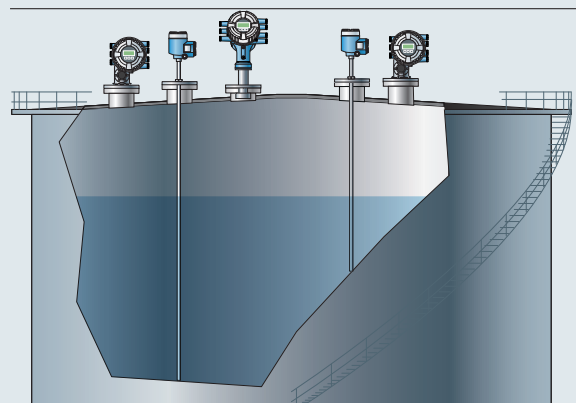
Custody transfer



Custody transfer

When a product is transferred, a change of ownership occurs (import/export) which implies duties and taxes for each transfer. Manual monitoring of such product movements requires a notified body to be present, which is very costly for each transfer. With an automated and certified Tank Gauging system, operators can create the legally required documentation themselves. An accurate measuring system which complies with local custody transfer law is required to monitor the transfer.

Safe operation of LNG tanks



Safe operation of LNG tanks

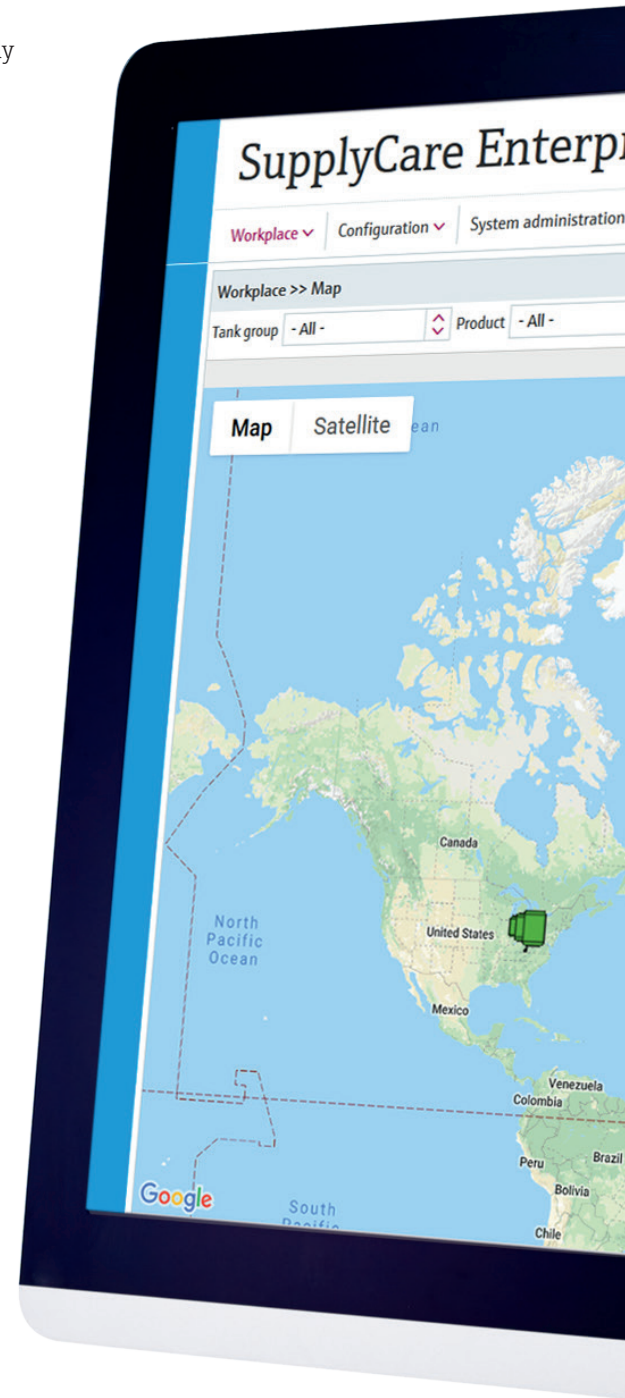
The process of monitoring LNG tanks is no different to that of oil tanks; in this case, however, possible gas phases complicate the measurement. That is why our Proservo gauge is the best choice.

The safe operation of LNG tanks must ensure that different densities and temperatures do not create layers which would result in rollover effects. The density profiles of LNG tanks are monitored with Level Temperature Density (LTD) gauges. Based on profiles and algorithms, Tankvision predicts rollover and enables upfront counter-measures. In addition, Tankvision monitors the skin temperature in order to detect leakages.

Precise monitoring on a global scale

Manage your inventories across multiple sites

International business needs global coverage. Endress+Hauser offers you a solution to consolidate your tank inventories around the world. This gives supply chain managers the power to make business decisions based on all the relevant information and keep installations at peak performance and accuracy.



Your benefits

- Accurate information in real time for in-depth decision-making
- Lower capital and operational costs based on improved material availability and reduced inventory
- Better customer service thanks to global information on the availability of raw materials and products



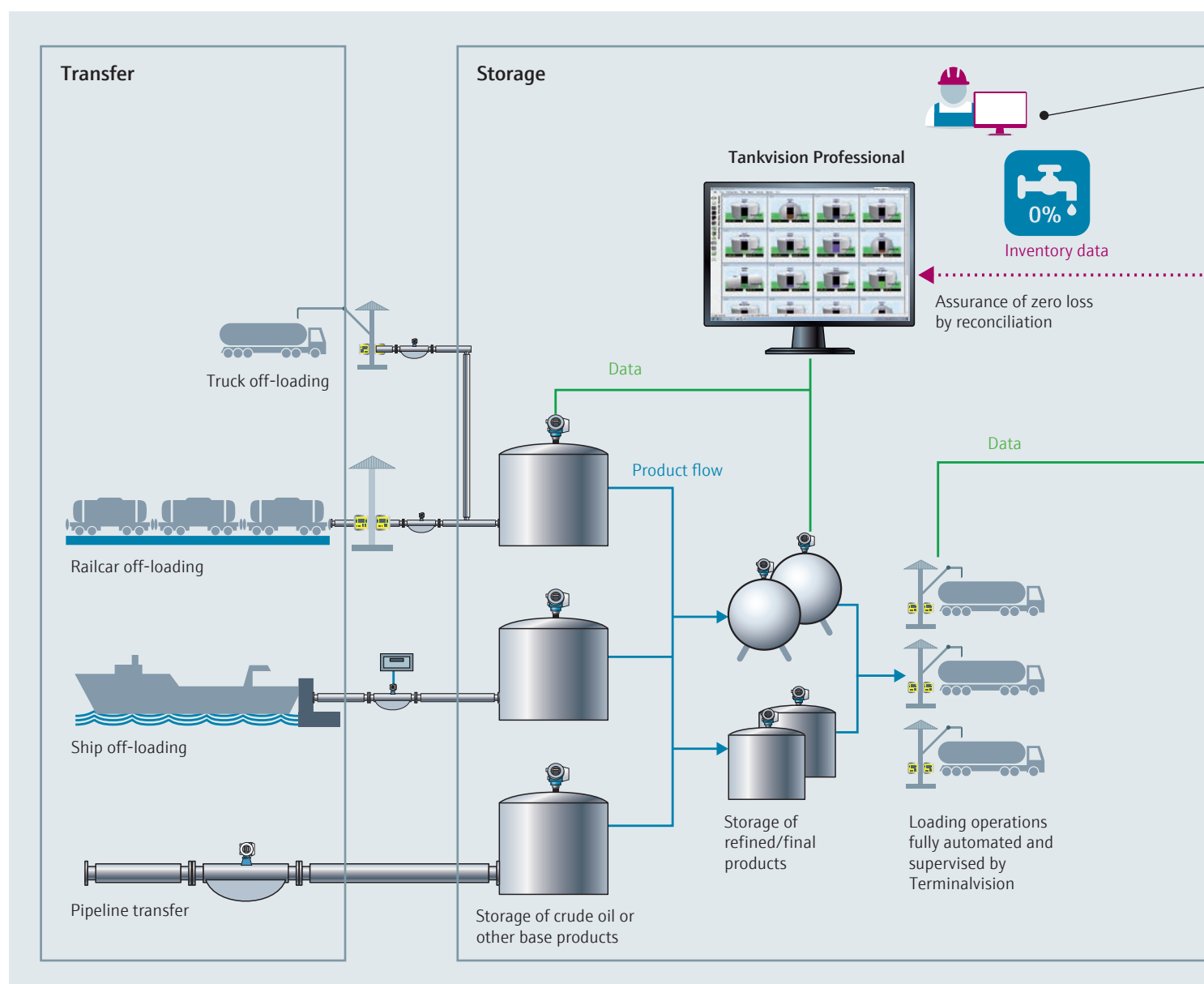
Manage the collection and transmission of data through the facility

Transfer, Storage and Distribution

Terminal Management systems manage the distribution of products. The importance of this topic is increasing more than ever before, owing to changes in markets, competition and in the regulatory and social environment. Despite the fact that these demands are well-known, the level of automation at many smaller petroleum product terminals remains relatively low. Even larger operations continue to suffer because of disconnected and fragmented systems. And with the growth of mergers, acquisitions and site expansions, many terminal owner-operators find themselves having to deal with different systems across their

sites. This results in the substantial task of coordinating activities, collecting the required information, avoiding incidents, training operators, and supporting the aging system architecture. All in all, the process is very challenging.

When selecting your potential path for the future, consider what direction you want to take. Choosing a well-established partner puts you in the best position to fully exploit market opportunities and make the most of your operation.

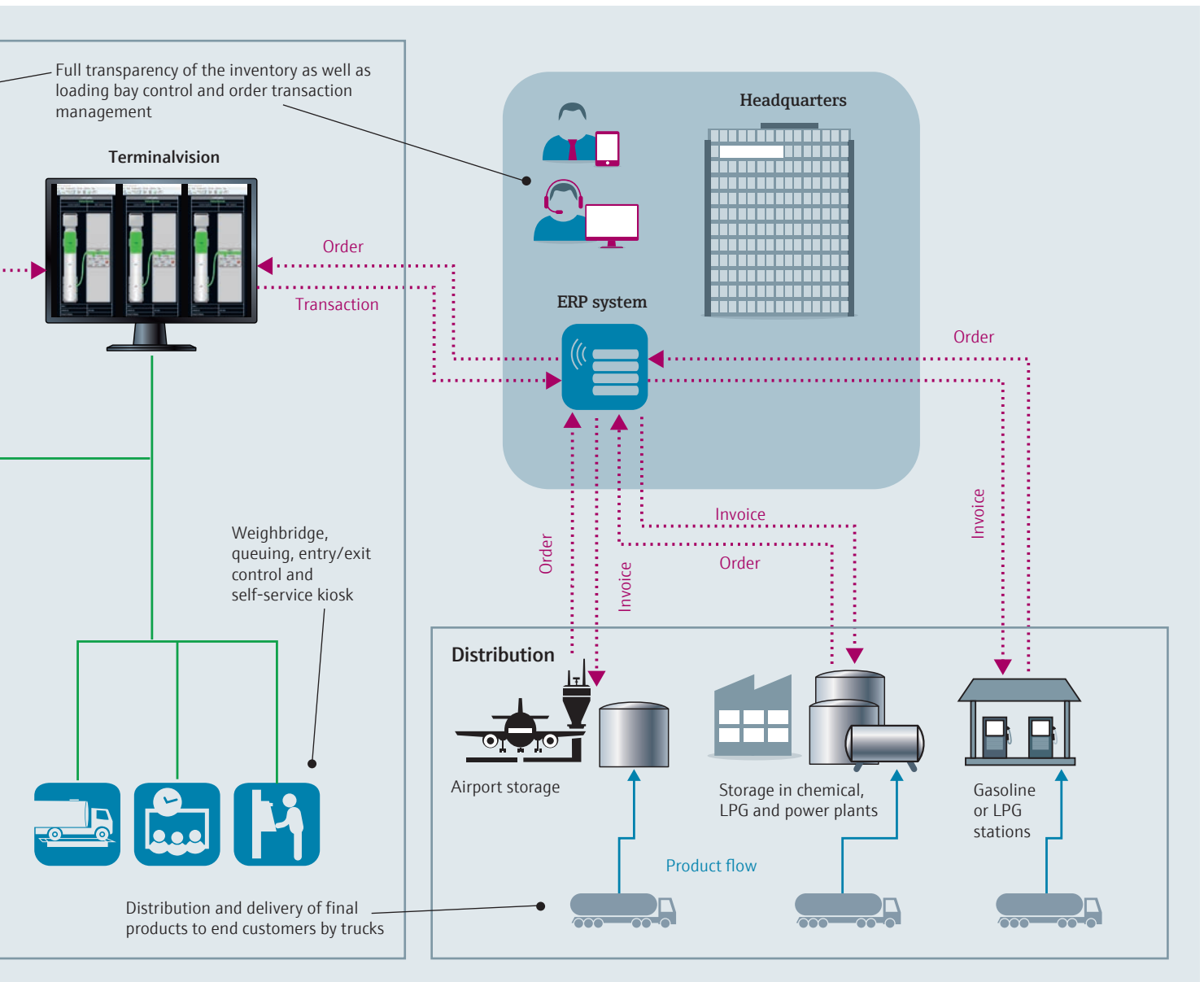


Endress+Hauser offers:

- Terminal Management systems for all applications, e.g. road, rail, ship and barge loading, depots and terminals.
- Approved Inventory Management including custody transfer and inventory calculation.
- Transfer from and between all aspects of a terminal, using integrated modules or third-party legacy management such as PLCs and weighbridges, etc.
- Management of process sub-systems and transports to business systems, i.e. Inventory Management, ERP systems such as SAP, as well as order entry and sales administration tools
- Scalable solutions from simple stand-alone stations for small depots through to complete client server systems for larger sites and multiple operator stations

**Your benefits**

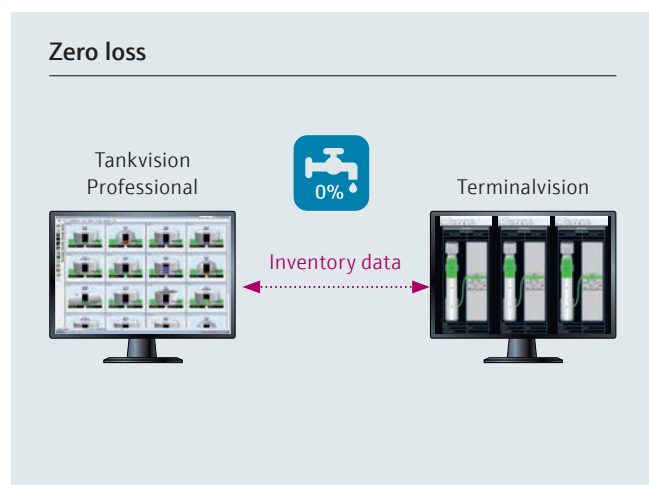
- Improved management of inventories based on complete solutions ranging from receipt of products to storage and delivery - for all applications, e.g. road, rail, ship and barge loading, depots and terminals
- Custody transfer metering skids in conformity with API (American Petroleum Institute) and MID (Measuring Instrument Directive)
- Enhanced accuracy and correct mass provided by high-quality products



Solutions to fit specific needs

From inventory transparency to the optimization of your queuing system

Zero loss

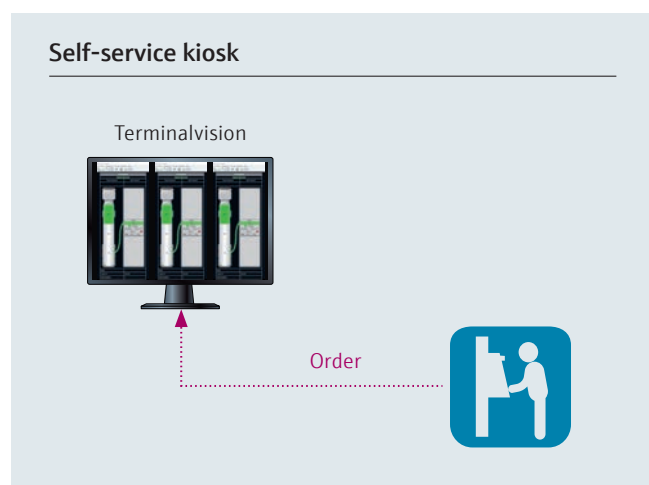


Zero loss

The most valuable asset in a Terminal Management system is the product itself. Our solutions help you to achieve operational excellence and zero loss through the terminal process.

Terminalvision helps terminal owners improve inventory transparency by reporting on product movements from tanks, loading bays and receipt points. It allows users to interact with Tankvision Professional in order to reconcile static and dynamic inventories of products, thereby detecting possible losses or unauthorized movements at all critical points. Terminalvision also offers reporting and commingled stock tracking functions, designed for situations where multiple companies own a percentage of a product in the same tank.

Self-service kiosk

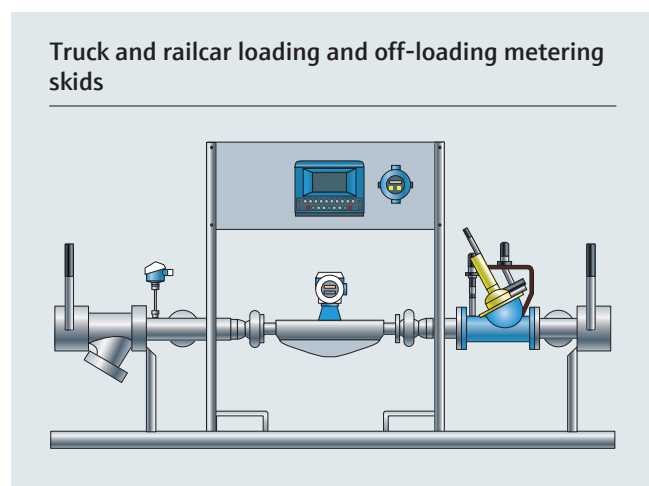


Self-service kiosk

The self-service kiosk is equipped with touch screen panels and connected to the Terminalvision software. It helps automate the ordering process at a terminal, and delivers time efficiency and staff savings on site.

The self-service kiosk is the main user interface used by drivers when they arrive on site. This system creates and selects orders once they have gone through the authentication process. Drivers are able to specify all applicable order details prior to proceeding to the loading bay through a user-friendly and error-free interface. At the end of the process, the relevant documentation - such as the Filling Advisory Note (FAN) and the Queuing Advisory Note (QAN) - can be printed out at the kiosk. The driver proceeds to the queue to load the vehicles with the requested product at the loading bay.

Truck and railcar loading and off-loading metering skids

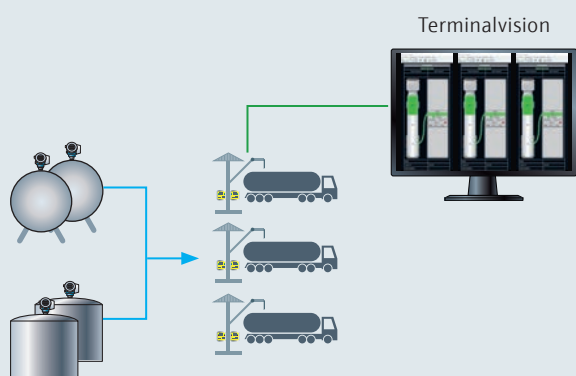


Truck and railcar loading and off-loading metering skids

Our standard solutions consist of modular components that can be mixed and matched as required. The package is approved by the Measuring Instrument Directive (MID) and covers repeatable applications.

In Oil & Gas or chemical applications, high-value products such as light hydrocarbons are received, purchased, stored, treated, distributed and sold. This means safety, accuracy, robustness, data reliability and data consolidation are absolutely imperative. Endress+Hauser can help you meet both your and your customers' expectations, which helps both sides increase profitability.

Truck loading operations



Truck loading operations

Our solution is able to fully control truck loading operations. This includes truck and personnel validation, permissive handling, precise reading of loading quantities, and successful storage of completed transactions in the system.

Terminalvision starts the loading process by validating the driver and truck in the loading bay via secure authentication methods. The software interacts with a broad number of metrologically certified batch controllers, allowing full and safe loading automation including admixtures and the blending of products. The loaded quantities should match the orders placed by the terminal customers. Our system gathers the transactional data from the loading bay, and in doing so ends the loading operations.

ERP integration

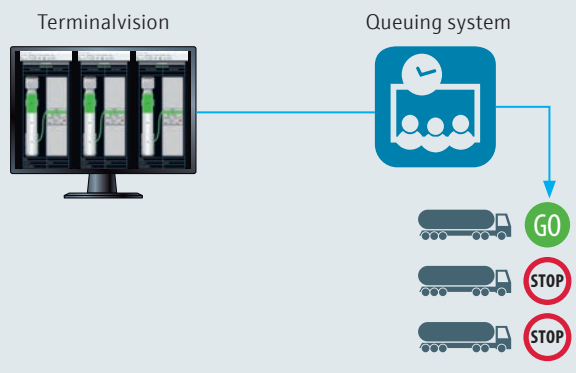


ERP integration

Our solution communicates the relevant data such as orders, transactions, truck and driver details from or to a central software-based ERP (Enterprise Resource Planning) platform. With the right information available at the right time, fast and automated decision-making is possible.

Terminalvision communicates with the ERP system from the company's headquarters via a middleware software using IT connectors. It passes on orders, reports transactions, and synchronizes the driver and vehicle information, thereby eliminating any corruption of data from the sensor to the boardroom.

Queuing optimization



Queuing optimization

An important aspect of running a terminal process is the transfer and off-loading time. All loading deliveries need to be executed as quickly as possible. Our queuing system is an effective tool to help you do so.

The truck queuing system allows the user to plan truck loading operations and to optimize the throughput of trucks at the terminal. Its intelligent algorithm takes into consideration the action and waiting times, as well as the number of check points and stations. Furthermore, order creation, loading order creation, loading bay availability and priorities are also taken into account. All queuing information is displayed in several languages on monitors in the waiting areas.

Our portfolio at a glance

Inventory devices

Features

Micropilot FMR6x



- Free space radar
- Perfect application fit in liquids and solids across all industries
- For use in a wide range of applications: simple storage tanks, corrosive or aggressive media or high-precision Tank Gauging applications

Micropilot FMR20



- Free space radar
- Continuous non-contact level and flow measurement
- Perfect application fit for the water and wastewater industry and utilities across all industries
- Measuring frequency: 20GHz

Levelflex FMP5x



- Guided radar
- Perfect application fit in all industries
- For use in a wide range of applications: storage tanks, corrosive or aggressive media or heavy-duty applications

Prosonic FMUx



- Ultrasonic provides continuous, non-contact and maintenance-free level measurement of fluids, pastes, sludges and powdery to coarse bulk materials
- Unaffected by dielectric constant, density or humidity and build-up due to the self-cleaning effect of the sensors

Tank Gauging devices (custody transfer)

Features

Micropilot FMR540



- Free space radar
- Cost-effective and simple installation via 4-wire cable with HART and 24 V DC intrinsically safe power supply
- Horn antenna: for storage tanks up to 20m (65ft)
- Parabolic antenna: for free space applications up to 40m (131 ft)
- Measuring frequency: 26GHz

Micropilot FMR532









- Stilling well radar
- Highly accurate non-contact level measurement
- Cost-effective and simple installation via 4-wire cable with HART and 24 V DC intrinsically safe power supply
- Measuring frequency: 6GHz

Tank Side Monitor NRF81



- Field gateway for tank sensor operation, monitoring and integration of data into Inventory Control system
- Weights & Measure approved for use in custody transfer applications
- Hydrostatic Tank Gauging (HTG)
- Output: Modbus EIA485 (RS485), Sakura V1

Tank Gauging devices (custody transfer)

Features	<p>Micropilot NMR81</p>  <ul style="list-style-type: none"> Free space radar with drip-off lens antenna 80GHz technology with sharply focused beam angle of 3° Avoids interference from tank wall and obstructions High level of safety (SIL3) and maximum reliability Measuring frequency: 80GHz 	<p>Micropilot NMR84</p>  <ul style="list-style-type: none"> Stilling well radar with 6GHz frequency Highly accurate non-contact level measurement Drip-off antenna with proven track record eliminates problems caused by condensation High level of safety (SIL3) and maximum reliability Measuring frequency: 6GHz 	<p>Prothermo NMT539</p>  <ul style="list-style-type: none"> Intelligent HART signal converter, with a combined average temperature sensor and water bottom interface probe Intrinsically safe device allowing the safest electrical configuration possible
Features	<p>Proservo NMS80</p>  <ul style="list-style-type: none"> Basic servo gauge for free space and stilling well applications High level of safety (SIL3) and maximum reliability Measurement of interfaces between up to three liquid layers, tank bottom, spot, and profile densities 	<p>Proservo NMS81</p>  <ul style="list-style-type: none"> Premium servo gauge with 316L housing for demanding corrosive applications for pressurized use up to 25bar High level of safety (SIL3) and maximum reliability Ideal for liquefied gases (LPG/LNG) 	<p>Proservo NMS83</p>  <ul style="list-style-type: none"> Precision measurement for liquid level, interface and density in sanitary applications Devices meet strict demands for high accuracy custody transfer measurement and Inventory Control

Our portfolio at a glance

Gateways

Features

Connect Sensor FXA30B



- Fully integrated, battery-powered cellular gateway
- External, configurable power outputs eliminate the need for sensor power supplies
- Remote monitoring in places where power is not easily available
- Four 4 to 20mA input channels, one HART channel and serial Modbus channel for up to four devices and one digital input

Fieldgate FXA42



- Developed for monitoring of field devices regardless of location
- For remote monitoring of connected 4 to 20mA analog as well as digital field devices via Ethernet, Wifi or mobile communication (3G)

Wireless HART Fieldgate SWG70



- Intelligent WirelessHART gateway with Ethernet and RS-485 interfaces
- Converts and stores wireless device data in a format that is compatible with other systems
- Fields of application: process optimization, tank and silo monitoring/Inventory Control, condition monitoring of equipment

Features

Gauge Link NXA20



- Acquires data from non-Endress+Hauser field instruments and converts it to Modbus
- Scans parameters from tank gauges
- Suited for tank farms with various protocols used to communicate with installed field devices
- Provides data to the Tank Scanner NXA820 via Modbus
- Ambient temperature: -40 to +60°C (-40 to +140°F)

Tankvision Multi Scan NXA83B









- Acquires data from Endress+Hauser and 3rd party field instruments (up to 16 loops)
- Data is provided to the visualization software Tankvision Professional NXA85 or other host systems (PLC and DCS)

Tankvision Tank Scanner NXA820



- Scans parameters from tank gauges and performs tank calculations
- Suited for small tank farms with only a few tanks, but also for large refineries
- Ambient temperature: -40 to +60°C (-40 to +140°F)
- Approved for custody transfer applications

Software

Features	<p>SupplyCare Hosting</p>  <ul style="list-style-type: none"> ■ Cloud-based Inventory Management platform for transparent information within the supply chain ■ To monitor product stock in tanks and silos at the desk or on the go using web browser technology 	<p>SupplyCare Enterprise</p>  <ul style="list-style-type: none"> ■ Enterprise Inventory Management platform for transparent information within the supply chain ■ To monitor product stock in tanks and silos at the desk or on the go using web browser technology 	<p>IMS Middleware SXS70</p>  <ul style="list-style-type: none"> ■ Enables integration of data from Inventory Management software into leading ERP systems ■ Inventory synchronization, forecasting and reconciliation ■ Purchase order requisition and confirmation ■ Master data replication ■ Terminal loading and off-loading processes ■
Features	<p>Tankvision Professional NXA85</p>  <ul style="list-style-type: none"> ■ Software which gathers data from various Tank Scanners, Multi Scans and host systems via field gateways ■ Suited for tank farms as well as large refineries with hundreds of tanks ■ Approved for custody transfer applications ■ Based on a distributed architecture on a local area network (LAN) 	<p>Tankvision LMS NXA86</p>  <ul style="list-style-type: none"> ■ LNG measuring system for up to 400 tanks ■ Multi-user interface ■ Gathers data from various Tank Scanners ■ Higher plant availability with LNG ■ Specific calculation models 	<p>Terminalvision NXS85</p>  <ul style="list-style-type: none"> ■ Terminal Management and loading monitoring software package for up to 400 devices ■ Automated reconciliation between booked and physical stock ■ Secure and controlled loading and off-loading procedure ■ Automated reporting possibilities: bill of lading

Our portfolio at a glance

Overfill prevention devices (SIL)

Features

Levelflex FMP5x



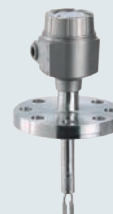
- Guided radar
- Perfect application fit in all industries
- For use in a wide range of applications: simple storage tanks, corrosive or aggressive media or heavy-duty applications

Micropilot FMR5x



- Free space radar
- Perfect application fit in liquids and solids across all industries
- Use in a wide range of applications: simple storage tanks, in corrosive or aggressive media or high accuracy Tank Gauging applications

Liquiphant FTLx



- Safety by design: point level switch for the maximum degree of safety
- Used for pump dry-run protection and overfill prevention
- Liquiphant stands for reliable switching unaffected by changing media properties, turbulence, foam, vibrations or build-up

Features

Overfill Prevention System SOP600



- Works as automatic or manual system
- Can detect signals for overflow, pump protection and leakage in the base of the tank and issue alarms
- Designed for up to 16 tanks
- With an automated proof-test sequence

Overfill Prevention System SOP300



- Works as automatic or manual system
- Can detect signals for overflow, pump protection and leakage in the base of tank and issue alarms
- Designed for up to 128 tanks
- With an automated proof test sequence



Your safety is our mission

We help you protect your plant, people and reputation

The storage and handling of flammable and toxic substances poses hazards for people and the environment. From time to time we are sadly reminded that there is no absolute guarantee of safety. Industrial disasters highlight the importance of proper safety management. Endress+Hauser helps you strike the right balance between plant safety, optimized resources, increased uptime and lower costs.

Safety by design

Our portfolio of instrumentation is designed to meet the needs of safe and reliable operation across industries. Functional safety requirements according to IEC 61508 and ISA documents are included by design. Proservo, Micropilot and Tank Side Monitor can be used in applications up to SIL3 with homogeneous redundancy.

Overfill prevention

Safety instrumentation by Endress+Hauser meets the requirements of API 2350 defined by the American Petroleum Institute to protect against storage tank overfill in petroleum facilities.

All of our products are designed and qualified in our independently certified laboratories. This includes the development of safety-related hardware and software.



Your benefits

- Higher plant availability
- Increased productivity
- Safety compliance

Services at your side

A sustainable partnership for improved plant performance

Our experts will assist you in every project phase - from consultation, engineering and commissioning through to operation. We help you to optimize your processes and thereby reach your goals. Wherever you are based, our global service team of over 1,000 experts is strategically located worldwide, ensuring an active local presence.

Professional services

Within our consultancy scope, we conduct technical audits as well as business consultancy assignments to identify potential areas for improvement and provide technical recommendations. Upon request, we can also help you define your requirements.

- Installed Base Audit
- Business process consulting
- Technical consulting
- User Requirements Specification (URS) development

Engineering services

Based on user requirements, our engineers can draft the design and engineering documents to deliver a system solution, containing all the required functional and technical details as well as third-party system requirements.

- Design specification
- Detailed engineering

Set-up, integration and deployment services

We select the individual components, organize assembly and installation, conduct acceptance tests and provide you with complete documentation and guidance for a successful hand-over.

- System set-up
- Factory Acceptance Test (FAT)
- Integrated Factory Acceptance Test (iFAT)
- Installation and integration
- Commissioning
- Site Acceptance Test (SAT)
- Training
- Documentation

Support services

Endress+Hauser's technical experts ensure that your installed base of instruments, software, and automated solutions run smoothly over time. Our support is tailored to your needs, available worldwide and around the clock to guarantee a fast response time.

- Technical support by e-mail and phone
- Online support
- Support on site
- Software updates





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