

innovations

in Process Automation



Digital transformation is revolutionizing your plant performance

Issue 15

IloT technologies and services initiate era of digital transformation



Industrial Internet of Things (IIoT) technologies and services are bringing widespread opportunities for performance optimization within the process and manufacturing industry. Roel van Doren, President Europe, Emerson Automation Solutions, answers our questions about what the exciting era of digital transformation means for Emerson's customers.

What do IIoT technologies and services involve?

IIoT technologies use network-enabled intelligent sensing devices and applications to collect, analyze and act upon huge amounts of plant data. Companies in the process and manufacturing industries have already been using connected sensors to feed data into computers to control their processes for many years. The IIoT uses connectivity as a means to extend this methodology, so that real-time data can be accessed and interpreted by experts anywhere in the world. They can then provide actionable insights that can lead to significant improvements in core areas such as energy consumption and equipment reliability.

What IIoT technologies and services does Emerson offer its customers?

Emerson's Plantweb™ digital ecosystem provides a range of technologies and services that can put companies on the path to digital transformation by targeting workforce productivity and organizational effectiveness. Plantweb is a scalable portfolio of technologies, software and services for securely implementing IIoT with measurable business performance improvement. Plantweb includes a broad range of Pervasive Sensing™ technologies, expert services, an extensive suite of analytical software tools, and secure and robust data infrastructure.

What is meant by the digital transformation of a plant?

Digital transformation involves combining IIoT technologies with workflow, process and cultural changes to facilitate operational improvements.

This requires a clear strategy, based on a company's key business objectives. If that is in place, digital transformation can be a game-changer in terms of exploiting technology and expertise better than ever before, to deliver performance optimization.

In what areas can digital transformation benefit companies?

Ultimately, digital transformation helps companies increase plant safety, reliability and profitability, driving them towards Top Quartile performance. It can eliminate repetitive tasks and streamline standard operations, allowing workers to focus on exceptions to normal operations, solving problems, and identifying opportunities for value creation. To tap the full power of digital technologies, it is essential to securely put them in the hands of workers, wherever and whenever they need them. This idea is key to enabling collaborative workflows. For example, if control room operators need to ask a process engineer how to solve a problem or improve performance, they can now do so from halfway around the world, with secure mobile applications that provide process data and analysis to both parties in real time.

“We can save a company around \$40 million on their ongoing maintenance budget for every \$1 billion of capital that they already have deployed in their plant.”

Are companies buying into the concept of digital transformation?

Ambitious companies clearly understand the need to evolve, and an increasing number of organizations are realizing that they must embrace the rapidly changing digital landscape in order to maintain or attain Top Quartile performance. Companies that have invested in IIoT technologies and services are, for example, achieving quantifiable business value through a significant reduction in maintenance costs, which is an ongoing annual expense. Even greater benefits can be achieved if the technology warns them that a piece of critical equipment is about to fail, enabling them to repair or replace it before it does so. That then prevents an extremely expensive loss of production. We believe that we can save a company around \$40 million on its ongoing maintenance budget for every \$1 billion of capital that it already has deployed in its plant.



To discover more about how Emerson's scalable and secure IIoT technologies and services can help you achieve measurable value from your investment watch this [video](#).



Mapping out a digital route to Top Quartile performance



Improving operational performance through digital transformation is an extremely important priority for many companies, yet most lack a clear understanding of how to achieve this ambition. Dennis Belanger, Director Operational Certainty Consulting, explains how Emerson's **Digital Transformation Roadmap** enables organizations to develop and execute the right strategies for success.

Many manufacturing and process industry companies believe they can reach Top Quartile performance through the digital transformation of their operations. However, surprisingly few have mapped out a route towards achieving this ambition. In many instances, operations technology (OT) and information technology (IT) leaders are siloed, rather than collaborating effectively. With no consensus on which technologies and strategies to implement, or any idea of what success even looks like, it is difficult for companies to know whether they are on the right track.

In an Emerson study of industry leaders responsible for digital transformation initiatives, 90 percent of respondents regarded having a clear and actionable roadmap as being important, very important or extremely important. Yet despite this, a mere 20 percent had a vision plus a clear and actionable roadmap for how to achieve their aim. The absence of such a roadmap was cited as the number-one barrier to progress for

digital transformation projects.

To assist its customers in reaching Top Quartile performance, Emerson has introduced its Digital Transformation Roadmap, supported by consulting and implementation services to help develop and execute a tailored digital transformation plan. Drawing on Emerson's Digital Transformation Maturity Model, our structured yet flexible approach helps companies focus on priority areas with a practical roadmap tailored to their business needs and readiness.

Emerson's Digital Transformation Maturity Model has two focus areas – business impacts and business enablers. The business impact element looks at a company's capabilities and performance relative to industry benchmarks in key areas,

“More than 37,000 wireless network installations and over 175 integrated reliability platforms and applications deployed worldwide.”

including production management, reliability and maintenance, safety and security, and sustainability. The business enablers aspect looks at a company's capabilities in organizational effectiveness and systems and data integration. For each, Emerson has identified detailed criteria to measure customer performance along their digital journey – from conventional to best-in-class, relative to the ultimate realization of digitally autonomous operations.

A company's digital transformation journey can begin from any point. It can start small in one facility to address key issues such as pump health or personnel safety and build from there. It can explore company-wide programs across a full impact area, such as reliability. On an even larger scale, it can opt for enterprise-wide strategy across all manufacturing and operations areas with a view to enabling true business transformation.

Supporting this, Emerson's Operational Certainty Consulting Group provides a host of services, from **Digital Transformation Roadmap & Strategy studies** and deep-dive change management programs, to deployment and adoption of specific digitally enabled toolsets leveraging the full potential of analytics, machine learning and IIoT. Customers partner with Emerson not only for its consulting expertise but also to implement its **Plantweb digital ecosystem**, which offers a robust software, data analytics, and product technology and services portfolio to help solve key

customer challenges and improve plant performance. Customers that engage with the **Operational Certainty Consulting Group** quickly gain clarity on the best way for them to obtain a realistic implementation plan for digital transformation, enabling them to achieve quantifiable results as quickly as possible.

Emerson's proven capability is bolstered by a global implementation team that includes more than 80 solutions architects and analytics integration engineers, backed by a project and service engineering workforce of over 8,400 people. Collaborating with customers in this way has enabled important foundations for digital transformation to be established around the world, including the deployment of more than 37,000 wireless network installations and over 175 integrated reliability platforms and applications.



For more on how Emerson's Operational Certainty Consulting Group can help your company improve operational performance through digital transformation, visit www.Emersontopquartile.com



Take predictive maintenance to a higher level with digital solutions



Achieving Top Quartile performance in the area of reliability requires increased availability of assets and reduced maintenance costs. Jean-Luc Goutagny, Director Reliability Solutions Europe, explains how digital transformation and predictive maintenance strategies can help companies to accomplish these aims.

Research shows Top Quartile performers spend two to four times less on maintenance costs than poorer performers -- a potential savings of \$24 to \$80 million annually for a \$1 billion plant.

Predictive maintenance relies on the collection and analysis of asset health data. Online condition monitoring is widely used for essential assets such as turbines, compressors, pumps and fans, supporting both predictive maintenance and machinery protection by enabling the equipment to be monitored remotely 24/7. By identifying issues earlier, maintenance tasks can be better scheduled and performed well before an operator alarm is triggered. This reduces costs – performing scheduled maintenance is usually half the cost of unscheduled maintenance – and further increases the

“Top Quartile performers spend up to four times less on maintenance costs than poorer performers – a potential saving of up to \$80 million annually for a \$1 billion plant.”

efficiency of available resources.

Obtaining greater access to information from across a plant is the starting point, aided by Emerson’s **Pervasive Sensing™**

technology. The data must then be converted into intelligent insights that enable better and quicker decision-making that will improve maintenance efficiency and operational performance. Data must also be delivered to the right people, whether they are located on-site, at another facility, or externally. Supporting this, Emerson’s mobile-ready asset performance software platform **Plantweb™ Optics** – part of Emerson’s Plantweb digital ecosystem – aggregates predictive intelligence and asset health information to create a holistic picture of asset health.

Plantweb Optics translates equipment health data into a user-friendly format and instantly and securely delivers it to relevant personnel, wherever they are. The cross-functional collaboration, enabled by connecting technicians, engineers and plant management through Plantweb Optics facilitates faster and better decision-making to help plants operate safely and profitably. In addition, by using industry-standard, embedded communications protocols, Plantweb Optics can share data with machine learning and analytics software to make predictions about future outcomes. This can then lead to the creation of new strategies for improved asset management and reliability.

At the enterprise level, data sources and flows are incredibly complex. Different sites may have different software and hardware solutions, which can lead to fragmented data sources, limited interoperability, and an inability to enable enterprise-wide workflows. To meet this challenge, Emerson has developed the **Plantweb™ Advisor Suite** of software applications – Plantweb™ Health Advisor, Plantweb™ Performance Advisor and Plantweb™ Energy Advisor – that provide enterprise-wide solutions to

monitor asset health, performance and energy usage. Using Plantweb Health Advisor applications for heat exchangers, blowers, compressors, cooling towers or pumps, companies can see overall equipment health; receive early warnings on equipment degradation to prevent leaks, fires and emissions; reduce repeat failures of equipment; reduce unplanned maintenance costs; perform only maintenance that is determined to be necessary; improve operational decision-making across departments; and provide instant information to quickly identify abnormal situations. Using Plantweb Advisor Suite, a 250,000 barrels-per-day refinery can recover as much as \$15 million a year in maintenance savings and new revenue. This would specifically result from 1.2 percent capacity recovery, 14 percent maintenance reduction, and 10 percent energy recovery.

Further supporting reliability improvements, Emerson’s **Plantweb™ Insight** is a web-based analytics software platform that instantly interprets critical data through a scalable suite of applications that relate to key assets such as steam traps, heat exchangers, pumps and pressure gauges. Engineered with machine learning-based asset models and analytics, this network of predictive intelligence enables users to identify abnormal situations and inefficiencies, recognize optimum maintenance times, and track the health of a facility’s key assets to identify and prevent failures before they occur. Its user-friendly, intuitive interface is easy to install, with pre-built analytics requiring minimal configuration, and it can run on any device with access to a web browser.

Centers provide remote expert analysis of critical plant data

Although digital technologies enable data to be generated from critical plant assets and processes, many companies do not have the in-house resources to analyze this glut of information. Emerson delivers a solution through its **Connected Services** offering, where its experts remotely monitor critical plant equipment in real-time. For companies in north-east Europe, such a service is provided at Emerson’s new monitoring and diagnostics center in Karlstad, Sweden. Similar centers in Norway and the UK are already operational, with further facilities planned in Russia, Germany, France, Italy, Ireland, Hungary and the Netherlands.



Discover how **Plantweb’s** portfolio of scalable analytics transforms data into actionable information.

For additional information on Emerson Connected Services, [click here](#).

Digital twin technology plays vital role in optimizing plant operations



Implementing a digital twin can be the crucial first step of a digital transformation strategy that aims to improve business performance. Ronnie Bains, Director, Process Simulation – Europe, explains how investment in Emerson’s digital twin technology can reduce the cost and risk of capital project execution and make continued operational improvements.

With digital transformation strategies being embraced by decision-makers to improve visibility into their business, increase asset reliability and optimize their operations, it is imperative to consider a digital twin as the first step of this transformation. A digital twin is a virtualized, software-based representation of physical plant assets such as process equipment, instrumentation and controls and the data associated with them. Companies that implement digital twin technology can make improvements in safety, training, knowledge transfer, environmental and regulatory compliance, and Operational Excellence (Op Ex) initiatives. Digital twin technology can be used to help improve performance across the entire lifecycle of a production facility, from capital project execution through ongoing operations. These lifecycle phases include conceptual definition, pre-FEED (front end engineering design); FEED; automation system design, implementation and testing; factory acceptance testing; operator training; and plant commissioning.

In a project’s process design phase, digital twin technology is used to build an initial representation of a plant. This enables engineers to understand where potential issues such as bottlenecks in the process may arise, their impact on production,

and how they can be rectified and validated, well before the plant is built. In addition, the digital twin enables accurate analysis of equipment.

Running an exact digital replica in parallel with the live plant creates a valuable means of upskilling operations personnel.

A digital twin exposes workers to what they will experience in their actual control rooms, but in an offline, non-intrusive and risk-free environment. This includes start-up and shutdown of the facility, and managing abnormal situations and process upsets in a safe and effective manner. Upskilling workers in this way and testing process adjustments in real time and without risk, before they are applied, has been found to provide significant tangible benefits, such as smoother commissioning and time to production, reduced energy consumption, improved equipment condition monitoring and increased plant safety.

“Companies that implement digital twin technology can make improvements in safety, training, knowledge transfer, environmental and regulatory compliance, and Operational Excellence (Op Ex) initiatives.”

Emerson’s digital twin technology is a key component of its **Plantweb digital ecosystem**, which aims to help companies achieve Top Quartile performance. A unique aspect of this technology is its open architecture and interaction between control data, historical data and design data. This advanced simulation can be leveraged on the largest and most complex scale, working in real-time to address potential impacts to industrial and manufacturing operations. This is integrated in an easy-to-use structure that can evolve and change with the needs of the operation, delivering a low total cost of ownership, reinforcing its continued use as an integral part of the facility’s operations.

The automation system vendor independence of Emerson’s digital twin solutions enables an automation platform to be represented with an exact, complete replica of the control system, operator displays and alarms, using either **DeltaV Simulate** or other distributed control system, programmable logic controller or safety instrumented system simulators. Emerson’s selective approach to model fidelity means that everything is simulated on a ‘smart modelling’ approach, supporting the goals of the project and the process.

Emerson’s Mimic™ simulation software provides IO and process modeling and a real-time execution and integration solution for these automation platforms, and its use is especially widespread in pharmaceutical and chemical industry applications. Other elements of the Emerson’s digital twin solutions include **Mimic Operator Training Manager**, supporting effective operator training and

assessment by adding training scenarios and instructor station controls; and **Mimic Test Bench**, supporting the automation and validation of control system testing, factory acceptance tests, providing a productivity tool which assists with regulatory requirements.

Users of Aspen HYSYS® simulation software can integrate HYSYS Dynamics process models, using the **Mimic HYSYS Link**, a joint product development between Emerson and AspenTech, creating a seamless integration between these platforms. This integration provides complete synchronized integration of Aspen HYSYS into the Emerson’s digital twin environment. It makes development and maintenance of the digital twin much easier for the thousands of companies already using HYSYS software, particularly in the oil and gas industry.

Supporting training on remote or dangerous plant operations, Emerson’s digital twin technology can include a virtual reality immersive simulator. This provides a 3D plant environment integrated to the dynamic process model, with real-time interaction between the different environments and resulting in a comprehensive digital twin, accounting for the perspective of both control room and outside operations personnel.



To discover why Emerson’s digital twin technology can be a key investment for your plant, visit www.Emerson.com/digitaltwin



Personnel location system safeguards workers in hazardous environments



Plant and worker safety is a priority for the process industries. Moazzam Shamsi, Director, Global Solutions Architect, explains how Emerson's **Location Awareness** system enhances personnel safety operations, reducing complexity and costs compared to existing solutions.

According to the International Labour Organization, each year 2.78 million people die as a result of occupational accidents or work-related diseases. In addition, there are around 374 million non-fatal work-related injuries and illnesses per year, and the annual cost of poor occupational health and safety practices is estimated at 3.94 percent of global gross domestic product. Refineries, chemical plants, oil rigs and power plants can be particularly hazardous environments, and the companies that operate them are therefore continually striving to optimize the safety of their personnel.

In an emergency, when every second is crucial, the priority is to locate and ensure the safety of all personnel on site. Therefore, when companies formulate a personnel safety plan, it should include an ability to pinpoint the whereabouts of workers in such situations, as well as a reliable means of getting help to them quickly, should it be required. Technological advances have led to the creation of real-time personnel location systems that can achieve these aims. However, the cost and complexity involved in installing and maintaining solutions of this kind has proved a major obstacle for many companies.

Emerson's Location Awareness personnel location system helps to overcome this problem. Location Awareness is an accurate, reliable and easy-to-install real-time personnel location system that enables industrial companies to enhance their safety operations for less than half the cost of existing solutions and with installation times reduced from weeks to just days. Consisting of several different technology layers, Location Awareness combines a new software application in Emerson's **Plantweb™ Insight** industrial analytics solution, with proven and secure industrial wireless infrastructure and rechargeable personnel tags that transmit real-time location data.

The scalable Location Awareness system includes a safety-mustering feature that provides real-time visibility by showing which employees have or have not checked in at their designated muster points during either drills or an actual emergency. It also includes man-down alerts, where personnel that have been injured in a dangerous location can push a button to send an alert with their location, enabling emergency response teams to be dispatched to their assistance as quickly as possible. Helping to keep up to 10,000 workers safe, a geofencing and monitoring feature within the system establishes a designated work zone, or geofence, around a group of personnel or contractors and provides alerts when someone ventures outside the zone. It also creates zones for known hazardous locations.


The system's personnel tags have a battery life of over two months and can be recharged in only two hours, thereby minimising maintenance needs. They are certified for use in very hazardous areas, and can be easily worn on lanyards, belt clips or other such accessories.



“Digitally transform safety operations for less than half the cost of existing solutions, with installation times reduced from weeks to just days.”

A high level of reliability is assured for the Location Awareness solution as it uses *WirelessHART®* infrastructure, proven in use with more than 12 billion operating hours at tens of thousands of plants and facilities worldwide.

Should *WirelessHART®* infrastructure already exist at a plant, this enables even greater cost and installation time savings to be made compared with implementing alternative solutions. Many competing services require extensive power wiring to their wireless infrastructure components, but Location Awareness does not because most of the components have their own power source.

 To learn more about how Emerson's Location Awareness can safeguard your workforce, click [here](#).



New digital approach to turnarounds reduces costs and shortens schedules



Shutdowns, turnarounds and outages are an essential but high-stakes undertaking for manufacturing and process industry companies, as schedule overruns can be extremely costly. Shahin Meah, senior director Plantweb Solutions & Lifecycle Services, Europe, explains how Emerson's digital technologies and specialized services provide a route to achieving safe, efficient turnarounds.

Turnarounds constitute the largest maintenance expense for companies in the manufacturing and process industries, and schedule overruns can cost millions of dollars per day. With the stakes so high, the successful planning and execution of turnarounds is crucial. Yet a report by Asset Performance Networks, which provides strategic consulting services for oil, chemical and energy companies, states that 74 percent of turnarounds fail to meet their performance goals. These are defined as being within ± 10 percent of budget, within ± 10 percent of schedule, and having no trips after start-up.

Such a high failure rate can be attributed to considerable budget and time constraints, lack of key skills and resources, and insufficient asset health data and analysis. Poor scope assessment,

such as failing to identify which equipment requires maintenance and repair, can lead to assets being serviced unnecessarily or issues with critical assets being missed. Bad planning can result in costly schedule overruns, while substandard workmanship during execution can lead to increased maintenance costs, unplanned downtime and even safety incidents, all affecting production and profitability.

To help overcome these issues, reduce risk and conquer complexity, Emerson has introduced a specialized framework of services and solutions for digitally transforming the way

“Labor and material costs can be reduced by up to 10%, and schedules shortened by up to 6%.”

companies plan and execute turnarounds. This offering is enabled by Emerson's **Plantweb digital ecosystem** and includes the use of wireless sensing, location awareness technology, predictive diagnostics and data analytics, combined with Emerson's expertise and proven turnarounds process.

Emerson's approach provides scope and schedule assurance to avoid last-minute surprises during turnaround execution, as well as improved labor effectiveness and reduced emergent and discovery work. The result is that labor and material costs can be reduced by up to 10 percent, and schedules shortened by up to 6 percent. On an average turnaround, these benefits could save \$3 million in labor and materials and shorten the schedule by at least two days.

Market research indicates that 60 percent of turnaround costs at facilities such as refineries or chemical plants derive from fixed process assets, including distillation columns, heat exchangers, piping and structural supports. Helping companies to reduce these costs, Emerson provides **Pervasive Sensing** technologies, predictive diagnostics, data analytics and scope planning expertise that can be applied to these critical assets.

For example, discovery work in distillation columns can be significantly reduced by using predictive data analytics and condition

monitoring. Fouling, plugging or coking can be detected using differential pressure and temperature measurements; tray damage or collapses can be identified with tray temperature and pressure profile monitoring; and corrosion assessed using real-time wall thickness monitoring with **Permasense™** corrosion sensors. These digital tools can help reduce discovery work by up to 60 percent. The accurate determination of work scope is also aided by digitalizing walkdowns with Emerson's **Digital Walkdown** mobile application on tablets, while Emerson's **Location Awareness** personnel location system can be used to manage safety by reducing labor congestion and inefficiencies.

By providing an effective turnarounds solution based on digital technologies, Emerson helps its customers to reduce costs and shorten schedules significantly, ensure worker safety, and create a path to Top Quartile performance.



Learn more about efficient turnarounds [here](#).

Global energy company drives operational improvement with new insights from cloud-based monitoring solution

Across industries, leading companies are recognizing the potential of digital transformation and are eager to embrace it – but successfully navigating through a sea of complex data architectures and digital technologies can prove difficult. Without the right plan and the right partners, many of these companies get bogged down in countless IIoT solutions that seem impressive but don't deliver the performance improvement to their operations that justifies investment.

Looking to guard against this pitfall and ensure real results, one global energy company recently partnered with Emerson and Microsoft® to unlock the power of IIoT and enhance its operational insight using a cloud-enabled monitoring solution for the heat exchangers at one of its refineries.

The heat exchanger conundrum: Highly susceptible to issues but only periodically monitored

Heat exchangers are critical production equipment designed to transfer heat from one medium to another and are used in various stages of oil and gas processing, both cooling and heating water, steam, gases and hydrocarbons within a plant. For a typical refinery, which has anywhere from 200-400 heat exchangers, these pieces of equipment can represent a major source of inefficiency, process downtime, and maintenance expense.

This is largely due to that fact that most heat exchangers are rarely instrumented well enough to allow for continuous insight into their health and performance. Because of this, the majority of exchangers are manually monitored, with months – and even years – passing between inspections. During these intervals, heat

exchanger fouling commonly occurs. Undetected, this fouling can cause degraded performance, reduced energy efficiency, process slowdowns and even unscheduled shutdowns.

Few refineries are immune, including those belonging to the company that engaged Emerson and Microsoft. In fact, prior to the partnership, the company was spending countless hours and dollars on its system of managing heat exchangers, one representative estimated. Plant personnel were manually checking and maintaining all heat exchangers and critical valves, which required periodically shutting down the entire production system. Worse, a low-level issue with a heat exchanger that developed between checks could potentially escalate into a costly repair by the time it was discovered. Given these issues, the company recognized it was business-critical to not only enact more effective maintenance but to get ahead of maintenance issues, altogether.

A partner solution emerges: Emerson Connected Services

To achieve that, the company worked with Emerson and Microsoft to implement a monitoring solution for the heat exchangers at one of its refineries as part an ongoing, enterprise-wide digital transformation effort.

Enter Emerson's Plantweb™ digital ecosystem – a scalable portfolio of IIoT technologies that enable digital transformation using innovative sensing technologies, the industry's most comprehensive offering of operational analytics, and variety of transformative services to improve plant performance.

One of Plantweb's key solutions, Emerson Connected Services, was chosen by the energy company to aid in its monitoring initiative.

Connected Services provides support to plant personnel from Emerson's experts who continuously monitor plant assets and processes, remotely. The service leverages decades of Emerson's expertise in pervasive sensing, making use of cost-effective sensor technology to capture data from intelligent field devices and deliver it to applications and experts who, in turn, provide valuable insights.

Utilizing advanced analytics, these experts interpret data generated from a plant's equipment and processes – in this case, heat exchangers – and provide plant personnel with the information they need to optimize operational performance. Key to this entire process is the ability to securely transfer vast amounts of sensitive data from a plant's floor to the cloud where it is analyzed, and actionable recommendations are generated. Safely moving these enormous, business-critical amounts of information was a task entrusted to Microsoft and its secure, scalable Azure cloud-computing platform. One of the biggest commercial cloud infrastructures to date, Azure is powered by a worldwide network of Microsoft data centers and offers a growing number of integrated cloud services and functionalities.

Leveraging this approach, actionable data is displayed on user-friendly dashboards, alerting plant personnel to potential issues that require quick action. This enables maintenance personnel to prioritize issues and schedule the best time for cleaning and repairing heat exchangers, avoiding extended downtime and ensuring optimal heat transfer. As a result, many facilities can reduce energy and capacity loss due to fouling by up to 10 percent. For a 250,000-barrel-per-day refinery, that could translate to

a savings of as much as \$3.5 million or more annually across all process units.

The Connected Services solution deployed by the energy company partnering with Emerson was designed to start small, focusing on harvesting and analyzing heat exchanger data at one refinery – and even at this scale, the enhanced monitoring solution measurably improved the plant's operational efficiencies.

The data and recommendations provided by Emerson experts, noted a company representative, helped shift the plant's maintenance strategy from a reactive to a proactive approach where the appropriate plant personnel are now alerted to issues before they impact operations and are equipped with the information they need to take action. Equally important, refinery personnel are now freed from time-consuming monitoring tasks and can more effectively focus on higher-value functions that benefit overall operations.

That's the power of enhanced insight, and that's the power of Plantweb.



Watch how industry leaders are leveraging technology to enable digital transformation in these videos:

- [Denka Improves Energy Performance With Plantweb and Connected Services](#)
- [Digital Transformation: the way forward for Operational Excellence for Chevron Oronite](#)

Emerson is a global automation engineering and technology leader, propelling the world's premier industrial companies into benchmark-setting performance throughout the lifecycle of their investments. At Emerson, we call it Top Quartile.

For decades, leaders in oil & gas, refining, power, chemical, mining and other process industries have turned to Emerson's expertise and innovations to deliver predictable project success. Emerson has been called upon to provide services and technologies to the world's largest and most complex projects, helping customers eliminate unnecessary capital construction costs, reduce project complexity and restore schedule certainty.

Once an asset is up and running, our clients leverage Emerson's unparalleled automation technology portfolio to achieve Top Quartile operational performance through maximum production availability and throughput, lower energy costs and reduced safety risk. Emerson's leadership extends from pervasive sensing technologies and the most reliable control elements to the industry's most advanced software platforms for operations management and asset health.

Emerson's more than 74,000 employees in 150 countries around the world wake up each day ready to take on our customers' toughest challenges, turning "never been done before" into "consider it solved."



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