FROM INSIGHTS TO ACTION

Optimizing crane operation through data

Modern industrial facilities face complex challenges: managing cranes process data ensuring consistent product flow, meeting strict safety and environmental standards, and minimizing downtime. An intelligent crane management system enables transforming these challenges into opportunities by turning operational data into clear, actionable insights.

Discover how integrated solutions help industrial operations work smarter, reduce downtime, and prepare for future demands – while keeping operations intuitive and efficient for everyone involved.

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A WAISTED POTENTIAL

The data challenge

Modern automated cranes generate vast amounts of operational data. Every lift, every movement and every interrupt creates data points that could improve operations – if only they could be properly interpreted and utilized. In steel and paper industries, for example, where uptime and precision are critical, the ability to make sense of this data in real time is essential.

Operators and managers must juggle priorities such as:

- Preventing unplanned downtime that disrupts production schedules
- Maintaining consistent performance regardless of operator experience
- Managing KPI standardization whether for a single crane or across an entire yard. Example: reducing energy consumption without compromising throughput

Without a scalable and unified data architecture, the performance and reliability of reporting systems can degrade, exposing operations to increased cybersecurity risks and reducing the effectiveness of data-driven decision-making.

From data collection to action: making sense of crane operations

Multiple cranes generate thousands of data points about their performance, energy consumption, and wear. Hidden within this data are crucial insights into equipment health, operator behavior, and process efficiency. However, without the right tools to analyze and interpret this information, the data remains untapped potential.

Comprehensive remote visualization of cranes management and terminal operations

The challenge isn't just collecting data – it's making sense of it in real-time and utilizing it to drive better decision-making. Modern crane management systems turn complex data into clear, useful information. Operators receive real-time feedback, maintenance teams get early warnings, and managers gain visibility into trends and performance metrics.

"Having data is one thing, but making sense of it, is another one."

One powerful feature is the ability to learn from past events. Every occurrence – whether positive or negative - is automatically recorded and displayed in an interactive and intuitive interface, enabling powerful replay functionality and detailed evaluations of past events . Through these advanced analysis functionalities, teams can visualize and examine records to understand root causes and identify opportunities for improvement. For example, if a crane performs especially well during one shift, teams can review what made that possible. Or if there's a near-miss incident, safety teams can study exactly what happened and update training to prevent similar situations.

BUILDING SMART OPERATIONS

A new approach to crane data management

The SIMOCRANE Crane Management System, built on the SIMATIC WinCC platform, addresses these operational challenges through an integrated approach to crane management. By combining real-time monitoring capabilities with advanced analytics and predictive maintenance tools, the system provides stakeholders across all roles with the information and controls they need to optimize their respective roles.

For crane operators, the system discloses real-time information in an intuitive graphic interface. With the right data underneath, CMS transforms complex operational data into clear, actionable insights, enhancing safety and efficiency without requiring extensive training or adaptation periods. The system's ability to present relevant information through customizable displays ensures that operators can focus on what matters most during their operations.

SIMOCRANE CMS provides operating and diagnostic information by means of an intuitive navigation interface.

Smart monitoring transforms equipment maintenance for enhanced operational reliability.

Maintenance teams benefit from a shift from reactive to predictive maintenance strategies. By monitoring equipment condition in real-time and analyzing performance patterns, the system helps identify potential issues before they lead to failures. This capability not only reduces unexpected downtime but also allows for more efficient resource allocation and maintenance scheduling. Remote diagnostic capabilities further enhance the team's ability to respond quickly to potential issues, often resolving them before they impact operation.

Operations managers gain instant visibility into performance metrics, resource usage, and energy consumption. With remote CMS designed specifically for high-end advanced crane systems, data from every crane is stored in one place, making it easy to monitor entire fleets from a single point of access and connect to any crane remotely. The system's reporting and analytics capabilities provide detailed insights whether you're reviewing a single crane or analyzing operational patterns across multiple cranes. These insights help identify patterns, enable to optimize processes and keep operations aligned with strategic goals.

A centralized data storage provides all information remotely from any CMS station.

Customers have the option to access individual crane data centrally, without needing to store it directly on the crane. Additionally, the system supports remote integration with a central server, enabling the aggregation of data from multiple cranes for comprehensive KPI reporting across the entire yard.

RCMS handles data from different cranes at the same time and perform comparison between different crane components.

In the Steel industry: Reducing downtimes through fast troubleshooting and fault diagnostics

In a high-temperature, dust-heavy steel plant in India, a customer implemented a centralized Crane Management System to monitor cranes from multiple automation suppliers. The CMS designed with seamless integration, allowing for flexibility and interoperability across the plant. This setup enabled real-time fault diagnostics, improved resource allocation, and increased crane availability. With the new system in place, critical vibration anomalies have been detected early, allowing for prompt corrective actions that help prevent equipment failures.

Open, modular and integrated

Industrial operations evolve—and so should your crane management system. SIMOCRANE CMS offers a modular architecture that grows with your needs. You can start with core features and add new capabilities when you need them. Understanding these varying operational requirements, the system has a modular architecture that allows you to begin with essential functionalities – like standard crane monitoring – and progressively scale up and expand to include more advanced modules into your existing CMS. This flexible approach allows that each facility receives the precise level of monitoring and control it needs, while allowing for seamless expansion as automation levels increase.

The system makes this easy – new features can be added without disrupting daily work. The core system handles the essentials: monitoring how the crane performs, spotting problems early, and keeping track of essential information. As your operation grows, you can add more features without interrupting your work.

This step-by-step approach helps in many ways. It keeps initial costs down while giving you room to grow. It makes training easier since teams can master basic features before moving to advanced ones. And it means you're never paying for features you don't need.

Integration capabilities, an open architecture and standardized interfaces ensure that the crane management system works seamlessly with third party equipment, cranes and automation systems.

This interoperability creates a connected ecosystem that enhances overall operational efficiency and information flow throughout the organization.

Predictive analytics and cost control

Gone are the days of fixing equipment only after it breaks. Our Crane Management System helps maintenance teams work smarter, not harder. The system constantly watches how equipment performs, looking for early signs of wear and tear. It's having a health monitor for your crane – catching small issues before they become big problems.

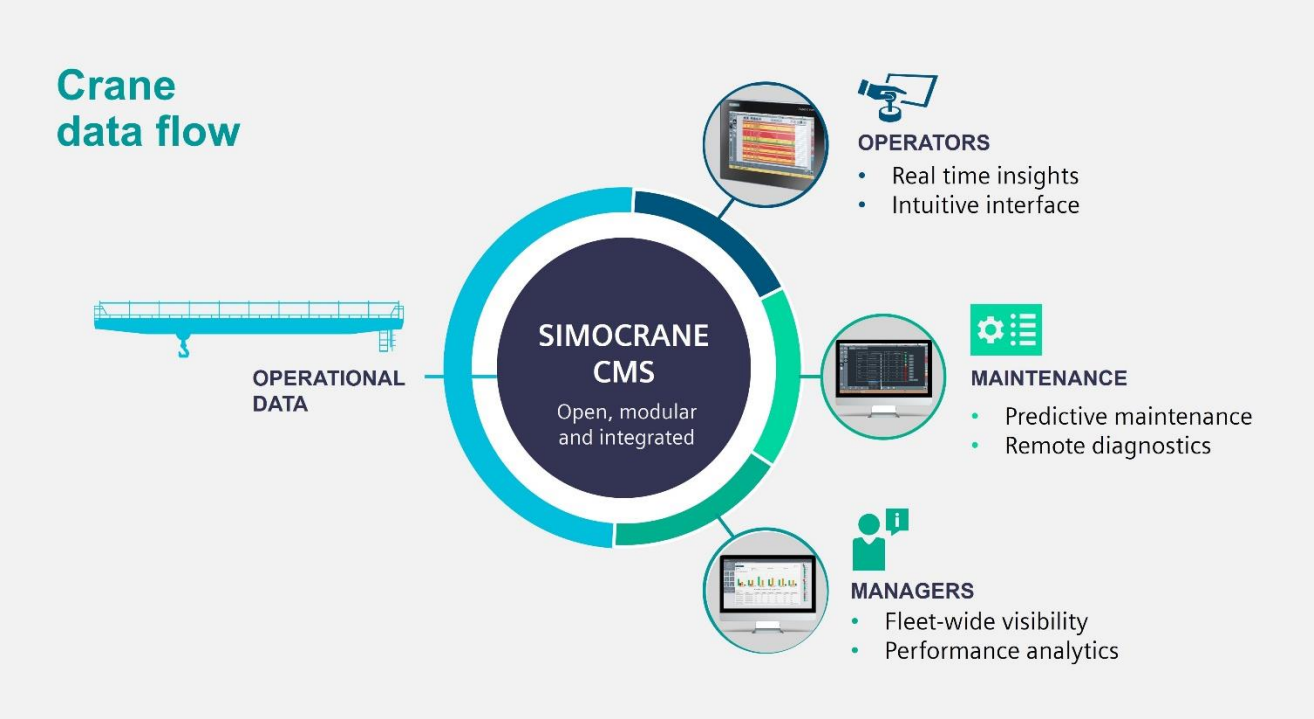
Maintenance teams can now plan their work better. Instead of rushing to fix unexpected breakdowns, they can schedule repairs when it causes the least disruption to operations. This means less downtime, lower repair costs, and longer-lasting equipment. The system keeps detailed records of every maintenance task, helping teams learn from past experiences and make better decisions for the future.

Using energy wisely is more important than ever. The system tracks how much energy each crane uses and effectively manages it to avoid power peaks. Small improvements in how cranes move can add up to big savings over time. Having clear information about the energy flow helps terminals meet environmental requirements while finding ways to work more efficiently.

In addition, crane management doesn't work alone. It needs to share information with other systems in the terminal – from planning software to maintenance schedules. This connection helps everyone to make better decisions. When the system spots a potential issue with a crane, it can automatically alert maintenance teams and help planners adjust schedules to prevent delays.

"Operators, maintenance teams, planners, and managers all see the same information, just presented in ways that make sense for their jobs".

This shared understanding creates smoother operations. Instead of different teams working with different information, everyone sees the same picture, helping reduce mistakes and save time.



Turning crane data into role-specific insights—empowering operators, maintenance teams, and managers with SIMOCRANE CMS

Safety and Training Excellence

Safety isn't just about following rules – it's about creating an environment where everyone can work confidently and efficiently. Modern crane management helps operators to work more safely by giving them clear information and warnings when needed. If something unusual happens, operators and supervisors can review exactly what occurred, helping everyone to learn and improve.

Training maintenance teams becomes more effective too. The replay function helps trainers show exactly how to handle different situations by playing back previous events through historical data visualization, much like a video playback. This capability eliminates the need for physical crane access since all necessary data can be displayed on demand. With generated screenshots, maintenance documentation can be enriched for consistent maintenance procedures.

Operators can learn by recreating past scenarios for them. The videos make it easy to understand complex events, providing detailed visual representation of actual operational situations. This will give them insights on such events and how to handle them in the future. This hands-on approach helps operators gain a clear understanding of how their actions affect operations and outcomes.

Operating a crane takes skill and concentration. Whether it's the first hour or the last, whether it's sunny or dark, the interface stays clear and easy to use. Warning messages are easy to understand and tell operators exactly what they need to know. This consistency helps reduce mistakes and makes work less stressful for everyone.

The future of smart industrial operations

The future of crane operations lies in intelligent, data-driven systems that support every role—from the shop floor to the control room.

As automation increases, so does the volume of data. SIMOCRANE CMS is built to handle this complexity, offering prescriptive analytics that not only predict issues but recommend optimal actions.

By providing a flexible, scalable, and open platform, SIMOCRANE CMS empowers industrial facilities to operate more safely, efficiently, and sustainably—today and tomorrow.

Whitepaper:

BUSINESS IMPERATIVE IN MANUFACTURING:

Strategic implementation of crane automation

Automated cranes bring intelligence and adaptability to material handling, consistently outperforming manual systems in precision, efficiency, and uptime. However, the path to automation is not without challenges. Identifying the right strategy requires navigating technical complexity, operational constraints, and long-term investment considerations.

To justify automation, any plan must clearly demonstrate sustainable value - balancing cost, scalability, and operational impact.

So how can manufacturers make the right move?
Explore this topic further in our whitepaper: ***Business imperative in manufacturing: Strategic Implementation of Crane Automation.***

Product information

SIMOCRANE Crane Management System

The SIMOCRANE Crane Management System (CMS) represents a significant advancement in crane operation and maintenance technology, offering an unprecedented level of operational control, monitoring capabilities, and system flexibility. This SCADA-based solution, built on the robust SIMATIC WinCC platform, delivers comprehensive crane management functionality through its modular architecture and intuitive interface.

System architecture and core capabilities

The SIMOCRANE CMS is engineered with a modular architecture that comprises:

- **CMS Core:** Fundamental operational features:
  - Real-time operational monitoring
  - Instant diagnostic alerts
  - Comprehensive data recording
  - Basic reporting capabilities
  - Seamless connectivity options

- **CMS Add-ons:** Enhanced functionality for complex operations:
  - Replay function
  - Condition Based Maintenance
    Fast Trace Viewer for transient signal analysis

- **Central CMS (CCMS):** Centralized system remotely

  - Data storage on central system
  - Connect up to 10 cranes
  - Same features as CMS core and Add-ons. Examples: Report functionality, Replay function, etc.
  - Possibility to connect to RCMS

- **Remote CMS (RCMS):** Comprehensive remote access capabilities:
  - Modern web-based interface
  - Actual and historical data access
  - Complete cranes terminal operations overview
  - Data comparison between multiple cranes
  - KPI analysis and Dashboards
  - On request and automatic report generation

Links:

- ↗ CMS webpage
- ↗ CMS Industry mall
- ↗ Cranes catalog