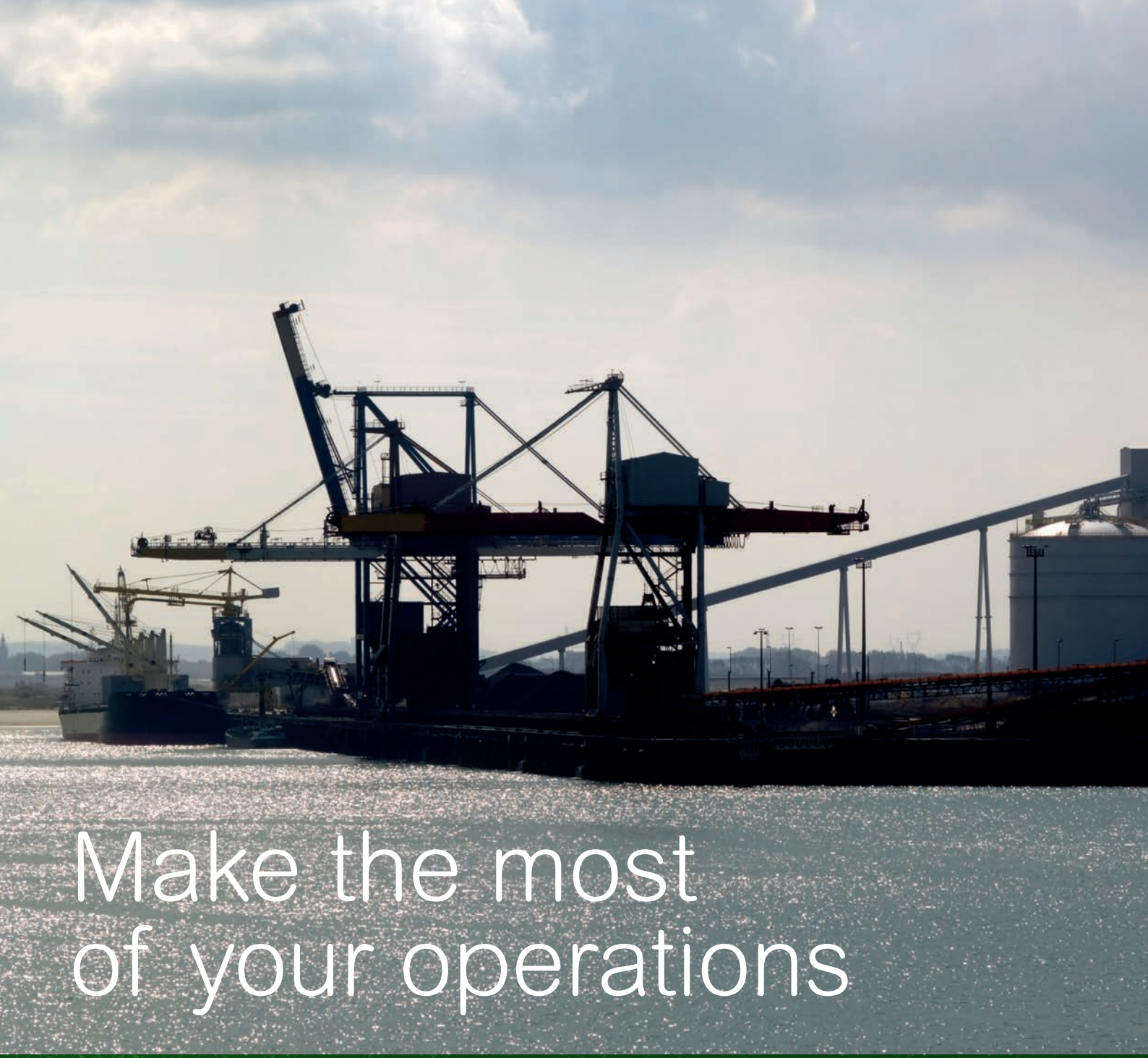


Make the most of your operations

Smart cranes

schneider-electric.com

Life Is On | Schneider Electric

From crane modernization to digital transformation

70 years of experience in hoisting

The world has changed in seven decades and since our first equipped crane by Groupe Schneider, the company has always thrived to utilize technological advances and innovation to meet Industrial needs. At Schneider Electric, our commitment to innovation is fully aligned with our strategy and purpose to become a world leading company in Energy and Industrial Automation. This engagement emulates for an all-electric and all-digital world. Digital transformation is now a requirement for many industries facing extreme competitive pressure and the need to invest in digitalization and modernization – elements that could deliver significantly efficiency and profitability.

Benefits

Our technology and our innovative approach in automation have been embedded in our products and services to deliver smart crane solutions to the highest levels of safety and performance.

- Protected asset investment and enhanced overall reliability
- Improved movements efficiency and productivity
- Safer workplace
- Increased crane availability and reliability
- Reduced mechanical wear and lower maintenance/ repair costs up to 25%

A tailor-made solution

A solution for every hoisting application

Special cranes and heavy loads require high-level of expertise to meet all the criteria of safety, performance and precision without compromising on reliability and availability. The industry is moving fast, and change is part of the new “normal”. Organizations operating such assets are driven by increasing flexibility and adaptability to improve logistics performance and material handling capabilities.

Cranes, gantries and other heavy load cranes such as container ships in the Harbor sector or grab cranes in the Minerals for example must improve their volume of handling products while meeting increasingly strict international regulatory constraints and safety directives.

With a global presence and over 120 cranes in several industries, Schneider Electric has developed extensive knowledge in the Hoisting business.

Overhead cranes

Industrial applications such as steel plants, waste factories, nuclear facilities, storage warehouses and many other applications requiring transportation of heavy loads.

Grab cranes

Ship unloaders dedicated for raw materials such as iron, coal and minerals in steel plants or harbors.

Jib cranes

Special cranes in various applications in the Harbor sector, steel factories or shipyards for ship manufacturing to maintenance.

RTG & RMGC

Rubber Tired Gantry and Rail Mounted Gantry Cranes mainly dedicated to container yard management for storage, truck loading and unloading operations.

RMQC

Rail Mounted Quay Cranes mainly in the harbor sector to manage Terminals and yard of container key to efficient port operations.

Others

All other cranes in electric utilities, work of art and lifting structures required in the transportation of heavy loads.

Smarter crane operations driven by EcoStruxure™

EcoStruxure is Schneider Electric's open IoT architecture that improves business efficiency by bringing visibility across all types of manufacturing environments.

EcoStruxure Hoisting Suite, a set of software's dedicated for hoisting applications, is designed to help bring connectivity and condition monitoring of your cranes and existing assets.
From a multitude of smart devices to controls and advanced algorithms, the system collects all relevant data and converges the information to deliver key and valuable information to help decision making.

Connected products

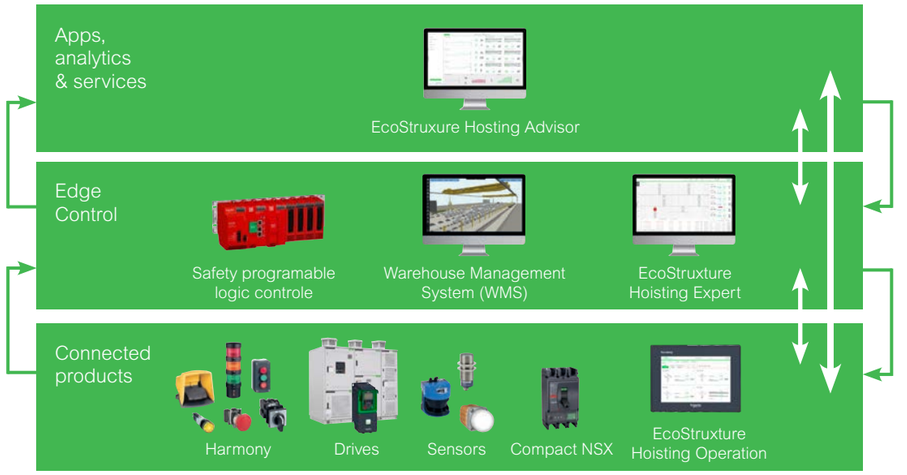
Field devices with embedded intelligence such as sensors, circuit breakers, meters, variable speed drives and scanners provide the link to real-time data that is essential to a higher-level of control.

Edge Control

Crane processes are mission-critical, so control of devices at the edge of the IoT architecture is a must. This essential capability provides real-time solutions that enable local control at the edge, increasing Safety Integrity Level.

Applications, analytics and services

Sophisticated problem solving and analysis at the enterprise level optimizes business operations and maximizes results.



EcoStruxure™ architecture
A complete set of components, hardware and a software suite for yard and crane monitoring, data efficiency and production improvements.

Schneider Electric your best partner in hoisting

Key technologies and advanced functions

The core of our solution is founded on the supply and integration of connected devices, Safety Integrity Level components, dedicated variable speed drives and intelligent sensors from best-in class products. Installed in strategic locations, lasers, scanners and positioning sensors associated to our expertise in setting up and programming the available technologies, brings the optimal hoisting solution to your plant operations.

- Advanced algorithms and proven antisway system
- 3D Dynamic Trajectories
- Grab control
- EcoStruxure™ Hoisting Suite
- Machine learning and Digital Twin

The resources & expertise behind our solutions

With quality and innovation at the heart of its values system, Schneider Electric benefits from a project-oriented organisation, supported by advanced skills and a solid business expertise.

- Dedicated hoisting experts and R&D organization to support you and your projects all around the world.
- Turn-key project and consulting services that cover site surveys, feasibility assessment and safety risk analysis to provide electrical modernization or automated operations of your assets.
- After sales technical support to help you anytime, anywhere. Available by phone or via digital tools, our Customer Care Center is dedicated to supporting your individual needs. On site services are also available with local and global hoisting experts.

Modernization

Crane modernization

Modernization is the first step in taking care of your initial investment and extending the lifecycle of your cranes.
Aging cranes require more maintenance and productivity is often impacted by frequent disruption and major breakdown. It's also a requirement to respect the latest regulations and safety standards to help preventing any incidents. Whether you are looking to improve comfort, help ensure your personnel protection, or simply increase reliability by implementing new technologies, the result will be a reduction of incurred cost of operations and maintenance.

Benefits

- Increased operations safety for people and equipment (following Directives & Harmonized Norms based on compliant architecture and detailed safety risk analysis)
- Up to 30% maintenance cost reduction (reduced mechanical stress provides significant savings on ropes replacement, drums, reducers, wheels, spare parts etc…)
- Increased availability through advanced diagnostic tools
- Increased productivity thanks to driver assistance and optimal crane operation
- IACS Ready (for autonomous yard)

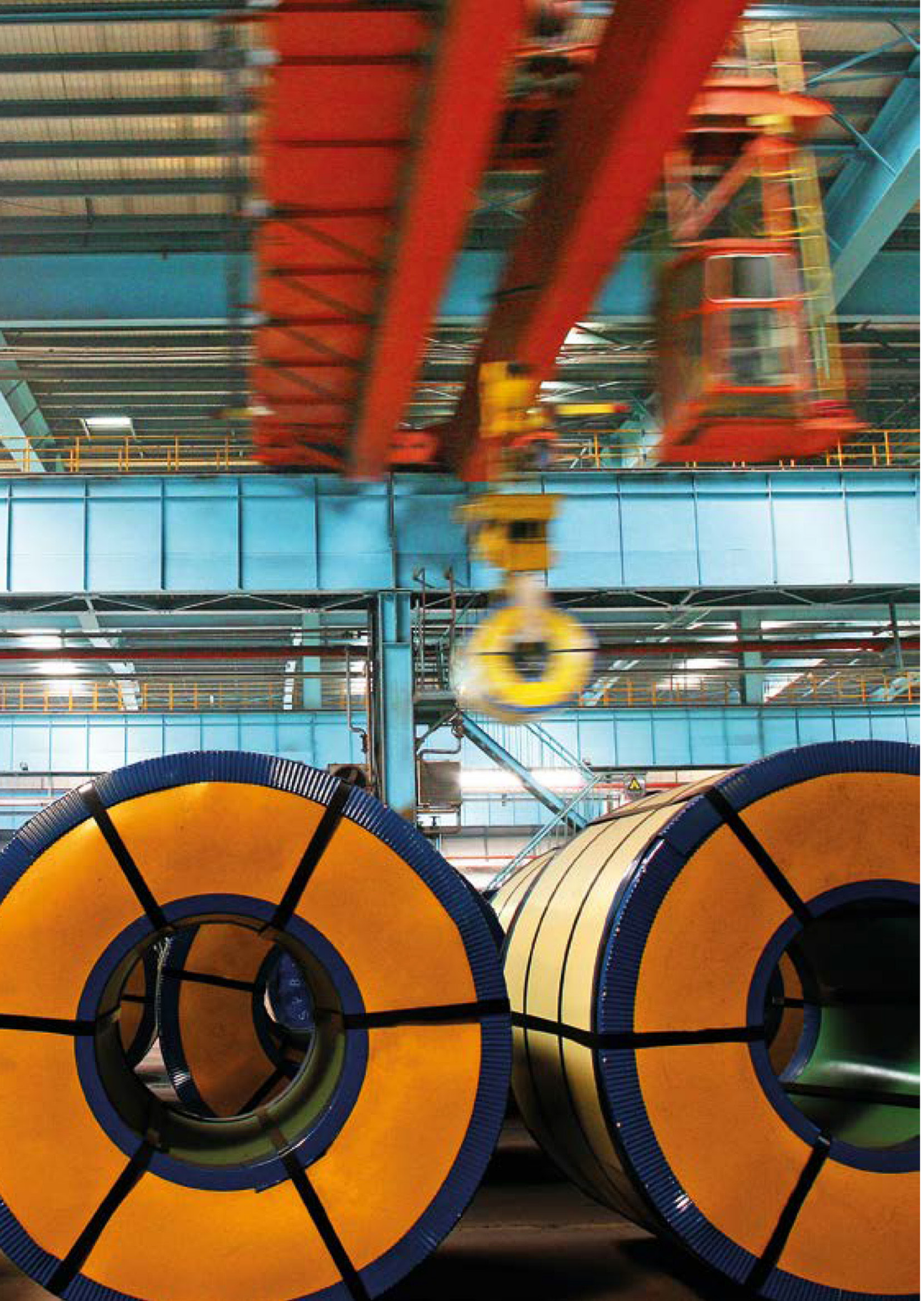
Remote Control

Real-time remote crane operation

Compared to traditional cabin-controlled cranes, remote operations can be performed 24 hours a day limiting access to plant floor. Remote control improves visibility and enables automated movements and the use of advanced functionalities. By means of installing the latest technologies, the remote operator supervises maneuvers from a comfortable and safe central location. Processes can be controlled with high flexibility and performance. Cameras are distributed in strategic places in the yard to allow monitoring in real-time and carrying out any operator tasks to manage all crane movements and handling materials.

Benefits

- Safe location and more comfortable environment for crane operators by implementing driving assistance and automated movements
- Resource allocation optimization
- Increased productivity by multi-crane control without any loss of time
- Healthier workplace environment



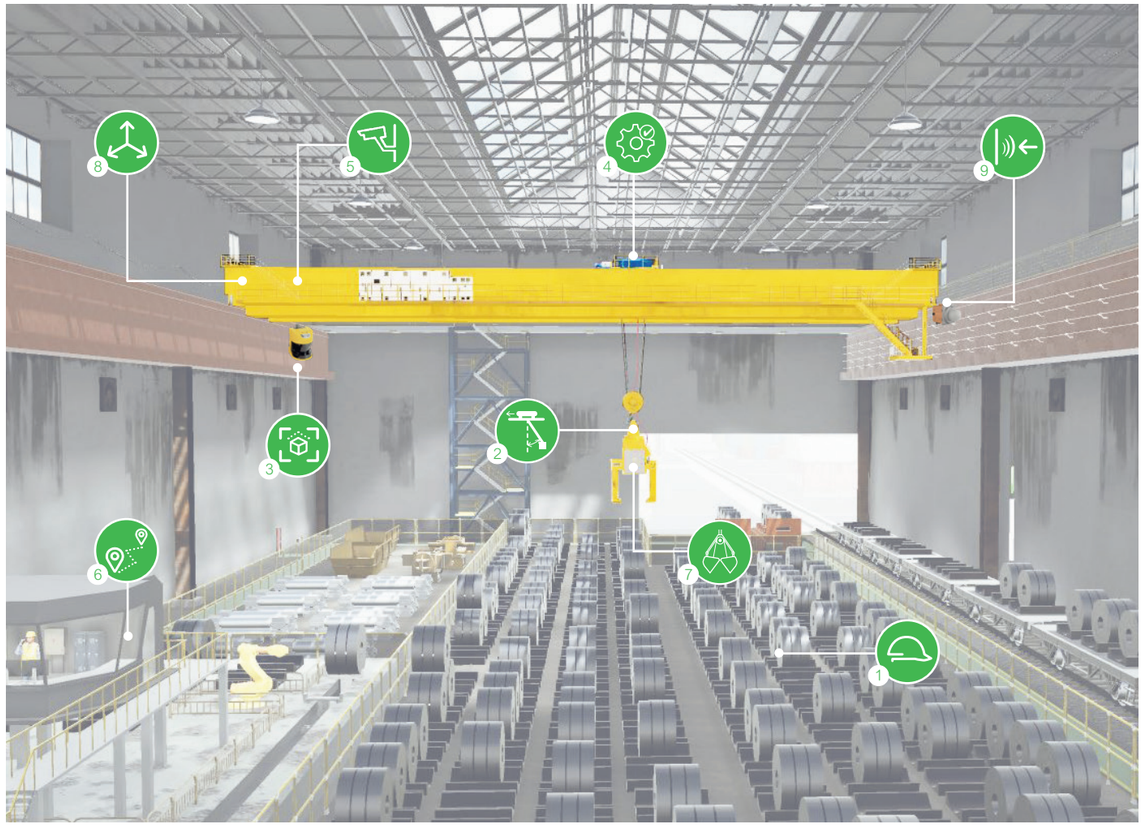
Crane Automation

Advanced automated operations

Schneider Electric offers a comprehensive set of automated functionalities across all applications and segments.
From steel plants to waste, harbor or nuclear facilities, cranes can be partially or fully automated by implementing advanced hoisting algorithms and functionalities reducing manual and repetitive tasks. Processes are achieved according to pre-defined sequences of movements. At all times, manual mode is possible, and cranes remain operational without loss of flexibility and availability.

Benefits

- Higher throughput and efficiency
- Reduction of mechanical wear and longer equipment life
- Movement optimization through high accuracy and intelligent trajectories
- Reduction of damage caused by manual operations
- Crane operations accessible from less experienced personnel

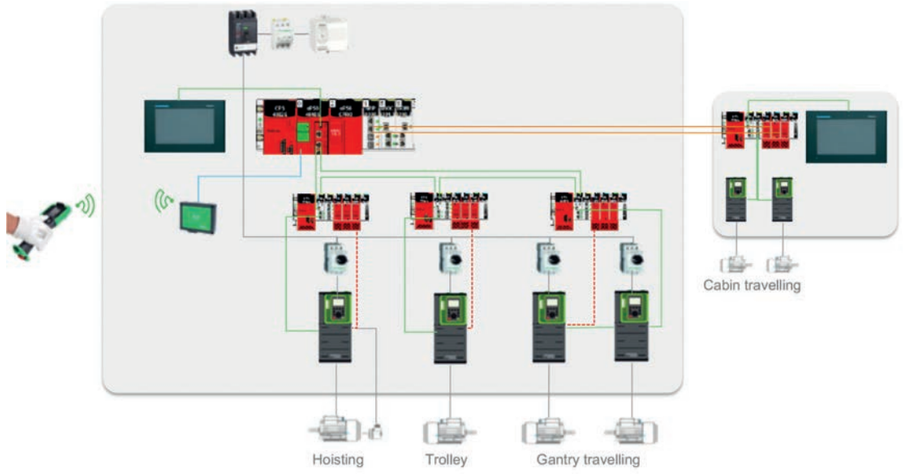


Related functions

1. Safety functions
2. Antisway system
3. Real time scanning
4. Kinematic chain control
5. Real-time CCTV
6. 3D Dynamic Trajectories
7. Grab control
8. 3-axis movements
9. Smart anti-collision

Standard architecture and programming template

Based on various crane projects and commissioning, the system implemented by Schneider Electric is designed and continuously upgraded with our latest hardware platform and technologies. Programming follows a rich set of hoisting templates, function blocks and dedicated library developed to enhance the level of automation and functionally required by the cranes.



Most advanced features

Through our long-time experience and know-how in the hoisting activity, Schneider Electric has developed a complete range of advanced functions to bring crane operations to the next level of digitization. Those advanced features meet your expectations from a simple movement modernization to a large and complex project of smart cranes.

Safety functions

Simplify and optimize the implementation of the latest Machine Safety Directives. We supply a complete and detailed risk analysis to help you achieve safety functions and required performance level and safety integrity level.

Antisway system

A high-precision closed loop anti-sway system is implemented to reduce load sway and perform accurate positioning during all crane movements. Combined with advanced algorithms, positioning loop and form recognition, the configurable and proven antisway system can handle various types of load and handling tools.

Real-time scanning

Real-time scanning of the working area using 3D form recognition technology measuring on the fly and during crane positioning.

Kinematic chain control

This solution has been developed for nuclear and critical loads (such as military materials and liquid steel).
Load control is performed under 70 ms enhancing security on the safety brake controls and verifying the integrity of the kinematic chain.

Real-time CCTV

The latest remote CCTV technologies provides realtime monitoring cameras to supervise and control every crane movement and production schedules related to handling resources in the warehouse.

3D Dynamic Trajectories

The system considers optimal path generation andobstacle avoidance by detecting in real time any new configuration of restricted area or safety zone and adapting trajectories instantly combining hoist, trolley and gantry.

Grab control

With a dedicated function block, the 4-rope grab regulation has been mastered over the years. The process helps optimizing holding and closing movement, including closing on the stack sequence and digging regulation. Combined with our anti-sway and semi-automatic cycle, it improves crane's overall efficiency.

3-axis movements

Each crane travel is carried out with simultaneous and dynamic 3-axis control. Combining hoist, trolley and gantry movements, travel time is optimized, and logistics efficiency increased.

Smart anti-collision

This solution is designed to detect discrepancy between positioning and safety sensors. Speed reference isadjusted on both cranes to remain in operation and improve yard efficiency without production discontinuity.

Risk assessment

A detailed risk analysis

As safety is our priority, a detailed risk assessment is performed for every project Schneider Electric executes, including Performance Level or SIL qualification for existing safety functions.

This assessment, carried out under the latest Safety Machine Directive 2006/42/CE and harmonized Standard ISO13849-1, is a thorough analysis of the project that identifies all processes, flow and situations to evaluate the effectiveness of the implemented measures and help reducing the probability of an accident.

For automation projects, reallocation of ground personnel significantly reduces risks caused by human interference and without any impact to crane efficiency.
However, should there be any requirement to interface with a field personal, procedures and Human Machine Interfaces can be implemented to secure and stop the crane. Once reactivated, operations can continue in automatic or remain in manual mode.
Specific areas such as maintenance or dedicated zones can be designed with respect to the required performance level.

Benefits

- Increase personal safety
- Conformity with the latest Safety Machine Directives
- Flow optimization and safer workplace

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Other Schneider Electric solutions for the industry

- Process control and supervision
- MV and LV solutions
- Energy & Sustainability Services
- Industrial Control Equipment
- Datacenters

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