



SIEMENS

Ingenuity for life



A photograph of a harbor with several large blue gantry cranes. In the background, a container ship is docked. The image is overlaid with a blue digital grid and various data points, suggesting modernization and technology. The cranes have 'DP WORLD' and 'JEMC' logos on them. The number '39' is visible on one of the crane structures.

Harbor Cranes Modernization

Make your cranes fit for the future

[siemens.com/cranes](https://www.siemens.com/cranes)

Lift your crane performance to the next level

Crane modernization extends crane life and improves productivity, maintenance and safety.

Why crane modernization?

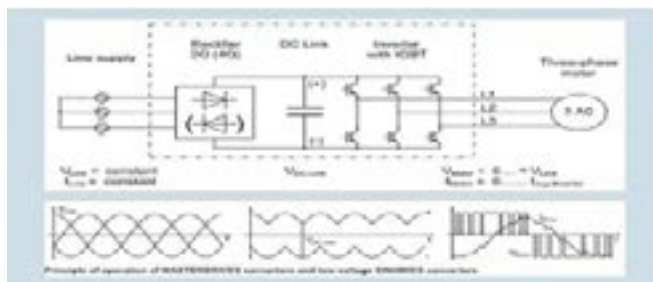
Harbor cranes have a lifespan of 25 years or longer. However, the drive controls life cycle can be shorter due to the development pace of technology. Obsolescence of older equipment comes with each technology advancement. Maintaining old technologies becomes commercially unattractive. Equipment obsolescence – limited spare parts availability, high cost for spare parts and replacement and service – will be a reality.

Reasons to upgrade existing cranes:

- Increase crane availability and reliability
- Productivity improvement to stay competitive
- Safety enhancement – personnel and equipment safety standards continue to evolve
- State-of-the-art technology is energy-efficient, intuitive diagnostics also includes many advanced functions

Easier crane modernization

Siemens' crane modernization concept is easy and fast to implement due to new SINAMICS S120 technology. The new equipment has a similar design philosophy compared to previous drives generation – MASTERDRIVES. This results in minimum modifications and short downtimes for the upgrade. In most cases, PLC's, transformers, motors, MV switchgears, etc. are in good shape and can be retained.



Design philosophy of MASTERDRIVES and SINAMICS S120 is similar

The replacement of only critical parts also contributes to short delivery time and low investment. With a modular concept, cranes maintenance becomes easier and faster.

Similarities between MASTERDRIVES and SINAMICS:

- Same voltage levels
- Comparable power ranges
- Similar basic structure

- Line connection module (LCM) remains
- Line contactors remain in the LCM – space in the Clean Power Filter Cabinet is sufficient for the AIM
- SINAMICS chassis with same power range fit in existing cabinets

Lifetime extension with minimum investments



Besides maintenance enhancement, modernization also helps extend crane lifespan, improves productivity and provides many other benefits:

- State-of-the-art technology, high reliability and availability of spare parts and service engineers around the globe
- Modernization results in increased crane uptime
- Harvest spare parts for remaining cranes with same technology, enables a gradual modernization
- Crane upgrade to higher level of automation and productivity
- Extension of crane drives' lifespan by more than 10 years
- Conversion from DC to AC results in lower cost for parts, less maintenance and reduced total operational costs

Any brand and type of drive system can easily be replaced by Siemens state-of-the-art drives – SINAMICS.



Practical overview of a typical drive train chassis exchange

Below pictures show an exchange of MASTERDRIVES by SINAMICS – cabinets remain.
In case no cabinets are used, chassis can be easily exchanged.

Process of removing MASTERDRIVES chassis



1. Original MASTERDRIVES chassis



2. Remove fan, decouple DC bus and cabling, capacitors



3. Remove chassis and supporting mechanics



4. Re-align the DC busbar position

Process of installing SINAMICS chassis



1. Install SINAMICS chassis supporting mechanics



2. Install SINAMICS filter – AIM

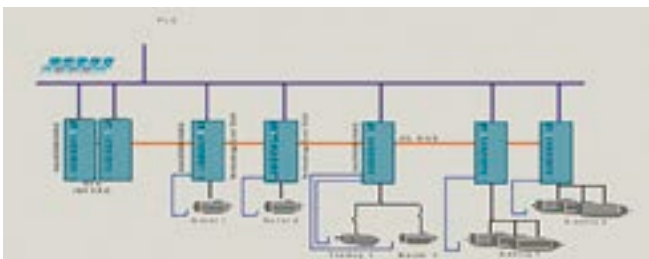


3. Install chassis, connect to DC busbar

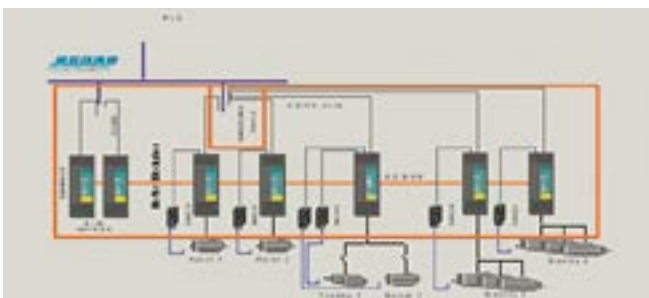


4. Connect motor cables and communication wiring

Similarities of crane configuration between MASTERDRIVES and SINAMICS



Common crane configuration with DC bus concept and MASTERDRIVES.



Common crane configuration with DC bus concept and SINAMICS S120 state-of-the-art technology.

Why this modernization solution is the best:

- Existing cubicles remain
- Existing incoming/outgoing cables to transformer and motors remain
- Limited mechanical work and minimum downtime to replace
- Low costs – upgrade only what's important
- Harvest spare parts for remaining cranes
- Minimal changes in PLC and crane management software

Boost crane productivity

When modernizing a crane, there are a number of automation modules available, with short ROI, to boost crane productivity on equipment or process level. We systematically track down this potential for you and offer a whole range of services relating to optimization and modernization.

TPS – Truck Positioning System



The TPS module supports the truck driver during lane choice and truck positioning with aid of a simple traffic light system

Sway and Skew Control



The Sway and Skew Control module ensures that load oscillations are minimized so that handling can be performed quickly and accurately without danger or damage to the transported goods.

LCPS – Load Collision Prevention System



Siemens' LCPS module contributes to safe operation by real time-monitoring of safe distances. It avoids collisions, risk of damage and consequently repair costs and down- times. The system supports to achieve higher safety, efficiency, and productivity of the crane.

RCOS – Remote Control



Siemens' RCOS module is an application that runs on every crane with Siemens and non-Siemens automation and drives. Remote operators need minimum time to learn. Multiple cranes can be operated from one desk. Unique is the real productivity achieved on remote controlled STS cranes.



Overview of typical automation modules

The world's safest, most productive, energy-efficient and reliable cranes are driven, controlled and automated by Siemens.

Committed partner of the crane industry

Our comprehensive and innovative portfolio, our decades of experience and industry-specific applications have made Siemens a preferred partner for crane operators all over the world. More than 5,500 container cranes have been equipped with Siemens products, systems and solutions in the last decade.

Modernization solutions

Sooner or later, every older crane requires modernization in order to remain competitive during its life cycle. Suppliers discontinue products when technology gets outdated, spare parts and systems expertise become rare.

Cranes have a certain technical complexity. Replacement or complete upgrades are often economically not the ideal solution. Siemens offers an alternative that promptly addresses the most critical systems while staying within a reasonable budget.

Siemens provides customized modernization concepts for cranes with Siemens and non-Siemens drives. We focus on upgrades of critical systems – only power electronics and automation – with minimum investment, improved productivity and safety.

As a Siemens partner, you benefit from a state-of-the-art portfolio which offers quality that lasts, in terms of applied products as well as the engineering and commissioning. A safe choice in every respect. It ranges from single systems and products to completely engineered and commissioned systems.

Our worldwide network of experienced experts work in close cooperation with our engineering and development departments. We ensure safe and efficient equipment operation and provide customers with virtually every level of support – quickly and reliably.

In almost every country worldwide, cranes are equipped with state-of-the-art technology from Siemens.



Whatever your specific crane needs, we have an appropriate modernization solution.

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