

SIEMENS

Ingenuity for life

SIMOCRANE Sway Control

The powerful automatic system
for safety and productivity

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

Efficient and reliable crane operations

Any motion of a crane where cables or ropes are involved causes the load to sway and can therefore be a source of danger to man and material. This sway also means that transport operations take longer. One method of making the process more efficient is the reduction of "sway" – the pendulum motion induced by moving a load from one position to another, while it is suspended by cables from the loading crane.

Before a load can be placed on the ship or pier, the crane operator must reduce the sway to a few millimeters. In an unassisted, manual operation, this process can occupy more than 30% of the average move time. To increase productivity, the Sway Control system offers the opportunity to minimize the crane handling time, simplify the complex operation tasks, assist crane drivers, increase productivity and avoids physical damage to the crane and crane driver.

Increase productivity in a secure way

The SIMOCRANE Sway Control for STS and GSU offers a powerful sway control system with not only neutralization of sway in manual and positioning operation, but also an automatic positioning with safety and time optimized trajectory in consideration of obstacles. In addition the system provides the flying unloading function for GSU crane, trim, list and skew control (TLS) and accordingly skew damping for STS crane. The skew damping can be carried out by either hydraulic cylinders or by an additional electric drive.

This system provides a higher degree of safety for personnel, the goods being transported and stress on the mechanical construction is reduced. The automatic sway control relieves the crane operator. At the same time the load can be positioned quickly and precisely.



With the semi-automatic mode (SAM) the load is moved smoothly. The load avoids the restricted areas fully automatic with maximum crane dynamics and high accuracy from the start position to the target location.

Integrated and standalone Sway Control Solutions for high operational reliability

Integrated and standalone solutions

The SIMOCRANE SC STS, GSU is an integrated solution that is built on the SIMOCRANE Basic Technology. The solution uses Siemens products for a complete crane application and has maximum optimization potential.

SIMOCRANE CeSAR STS, GSU is a stand alone solution. This solution comprises a powerful control computer with PROFIBUS or PROFINET interface. SIMOCRANE CeSAR is suitable for both Siemens and third-party drives and PLC.

Prerequisites for using SIMOCRANE Sway Control are a high level crane control system as well as drives that can be continuously controlled.

For all crane types, position sensors are required for the hoisting gear – and for the axes that have to be positioned.

SIMOCRANE SC/CeSAR STS, GSU is suitable for the following crane types:

- Container cranes (STS)
- Grab ship unloader (GSU)

Siemens' extensive experience in cranes has led to an integrated and ergonomical sway control system. The systems corrections are smooth and optimized like a highly skilled crane driver would perform them. The result is an unmatched "natural feel" which is highly appreciated by crane drivers.

Working principle

The sway control system is based on calculations of a mathematical oscillation model. The hoisting height, swing angle and skew angle are determined via optical measurement. The system continuously measures the load movements and the sway control system calculates the speeds while the crane is travelling.

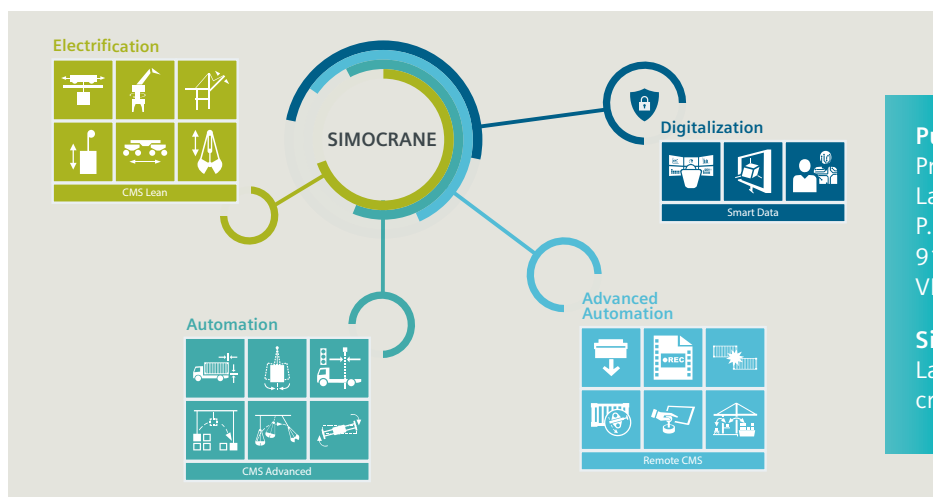
Different control algorithms can adapt the behavior to meet specific requirements like high productivity or minimum stress on the crane construction. High efficiency algorithms ensure high operational reliability even in poor sight conditions.

Ship to Shore Container Cranes (STS)

- Manual mode
- Positioning mode
- Sway neutralization
- Semi-automatic mode
- Trim, list and skew control
- Skew damping

Grab Ship Unloader (GSU)

- Manual mode
- Positioning mode
- Semi-automatic mode
- Sway neutralization
- Flying unload



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