

STS Crane Refurbishment in Honduras

The Puerto Cortés container terminal is the main seaport in Honduras. It is capable of handling roughly 600,000 TEUs (twenty foot equivalent container units) per annum. The port is equipped with two ship-to-shore (STS) cranes, five mobile harbour cranes (MHCs) and 12 straddle carriers. Puerto Cortés is state owned and is operated by Empresa Nacional Portuaria (ENP). For more information visit www.enp.hn

The Challenge

Tough global competition in the international container shipping market demands that major ports, such as Puerto Cortés, constantly look for ways to enhance their efficiency. As part of their ongoing push for greater efficiency, ENP recently decided to refurbish one of Puerto Cortés' two 20-year-old PACECO manufactured STS cranes in order to improve its performance. The goal was to improve container handling, provide more rapid and precise crane positioning and reduce downtime and maintenance time.

The Solution

Emerson Control Techniques switched the electrical system from DC to AC and replaced the LV electrical equipment and LV auxiliaries, the drives, the PLC and its devices and the crane control software.



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The drives installed on the crane were as follows:

- Active front end - 4 x Unidrive SPMD 1423 (943 A)
- Hoist - 5 x Unidrive SPMD 1423 (1200 A)
- Trolley - 1 x Unidrive SPMD 1421 (180 A)
- Boom - 1 x Unidrive SPMD 1421 (180 A)
- Gantry - 2 x Unidrive SPMD 1421 (342 A)



They have also replaced the crane's DC motors with AC FLS motors from a sister Emerson company: Leroy-Somer. The motors included a 560 kW AC hoist motor, a 55 kW AC trolley motor, a 75 kW AC boom motor and sixteen 11 kW DC gantry motors. All these motors are controlled by means of Unidrive SP digital drives connected via a Profibus and fibre optic network to a type S7-300 PLC.

The Benefits

The SM-Application modules of the drives that operate the hoisting motors use a load balancing function to control hoisting and calculate the maximum lifting speed. With the spreader empty, the SM-Application modules enable movements at the maximum programmed speeds.

The efficiency of the STS crane was improved using Control Techniques' dedicated crane control software: the Crane Management System (CMS). The CMS incorporates leading-edge digital technology and a distributed operations system based on Fieldbus. It is programmed onboard the SM-Application modules that are fitted to the PACECO crane's hoist drives. The CMS relieves the operator of delicate and repetitive tasks by optimising the crane's movements and trajectories as well as improving position location and reducing load swaying. The CMS also contains software packages for diagnostics and maintenance that automatically monitor the cranes to assist technicians with repair and preventative maintenance operations.

KEY BENEFITS

- SUPERIOR CRANE EFFICIENCY
- OPTIMISATION OF CRANE MOVEMENTS AND TRAJECTORY
- IMPROVED CRANE POSITION LOCATION
- REDUCED CRANE LOAD SWAYING
- AUTOMATIC DIAGNOSTICS ASSIST WITH REPAIR AND MAINTENANCE



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