

Case study

Ship to Shore Crane System – Tampa, Florida

Project Summary

Project: Ports America Expansion
Location: Tampa, Florida
Client: Shanghai Zhenhua Heavy Industries, Ltd. (ZPMC)
Application: Ship to Shore (STS) Container Handling Cranes
Commissioned: 2016
Technology: Common Bus AC Drive System
Crane Capacity: 65 LT

Nidec's role

Nidec Industrial Solutions was selected to supply the complete electrical package for two new cranes manufactured by ZPMC and supplied to Ports America in Tampa, Florida. Nidec supplied the complete electrical package from the Medium Voltage (MV) Switchgear to the AC motors.

Nidec provided a custom solution to meet the overall needs of the customer. System components like the GEFANUC Programmable Logic Control system were supplied to match those used in upgrades of the port's existing cranes.



The Challenge:

To Maintain Servicing Customers with Growing Ship Sizes

Ports America operates the only container terminal at the Port of Tampa. Florida has a large consumer population that is serviced by eleven ports around the Florida coast. These ports provide several options for shipping companies to bring their cargo to market. Ports America's Tampa facility is the only major container port on the gulf side of Florida. It is strategically located to service the third largest city in Florida. With the widening of the Panama Canal, larger ships are being used to bring cargo to Florida. This has driven a need for larger cranes. Ports America needed to upsize to larger cranes if they were going to stay competitive in the market.

The Solution:

New Ship to Shore Cranes from ZPMC

Ports America selected ZPMC with a Nidec Industrial Solutions AC drive system for the project. Nidec provided a control system that was similar in layout to a crane recently upgraded at the facility. This allowed the customer to utilize existing knowledge, training and Nidec's locally based parts and support to maintain the cranes.

**System Components Supplied by
Nidec Industrial Solutions**

Medium Voltage Power Distribution System consisting of:

- Medium Voltage Transfer Switch
- Power Distribution Transformers
- Power Monitoring and Protection System

Low Voltage Power Distribution System consisting of:

- 480VAC Auxiliary Power Distribution
- 480VAC Shore Power Transfer Switch
- Motor Protectors System for constant speed motors

575VAC Drive System Including:

- (2) Hoist/Gantry AC Inverters
- (1) Trolley/Boom Inverter
- (2) Active Front End (AFE) Converter Sections

575VAC Motors

- (2) Hoist Motors with Encoders
- (1) Trolley Motor
- (1) Boom Motor with Encoder
- (16) Gantry Motors (2) with Encoders

Operator and Maintenance Stations

- Operator Control Chair
- Boom Operator Station
- Gantry Operator Station

Programmable Logic Control System

- GEFANUC PLC Enclosure
- Remote I/O Stations

Human Machine Interface (HMI) System

- CraneView™ Crane Management System
- OperatorView™ Operator Control Screen
- GantryView™ Remote Gantry HMI

CRANE CHARACTERISTICS		
Crane Type	Ship to Shore	
Manufacturer	ZPMC	
Crane Capacity	65 LT	
Trolley Type	Rope Driven	
Container Sizes	20, 40, 45 and Twin 20	
	English	Metric
Gauge	100 Ft.	30.48 m
Outreach	174 Ft.	53.04 m
Lift Height	130 Ft.	39.62 m
Hoist/Lower Speed (Empty Spreader)	590 ft/min	180 m/min
Hoist/Lower Speed (65LT Load)	295 ft/min	90 m/min
Trolley Travel	787 ft/min	240 m/min
	Qty.	Size
Main Hoist Motors	2	565 KW
Trolley Motor	1	330 KW
Boom Motor	1	215 KW
Gantry Motors	16	20/36/46 KW
ANCILLARY SYSTEMS		
Ship Profiling		
Soft Landing		
Open/Closed Loop Sway Control		
Semi-Automation		