

## 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

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