



**CONTROL  
TECHNIQUES**



# FLOATING GRAB CRANES

UNIDRIVES | CRANE & HOISTS

**DRIVE OBSESSED**

# TURN-KEY SERVICE FROM DESIGN TO INSTALLATION

Four floating grab cranes in Amsterdam, mainly used for ship to quay bulk handling, have been retrofitted with drives from Control Techniques. The two 16-tonne cranes with AC Unidrive variable speed drives, the two 25-tonne cranes have been fitted with Mentor II DC drives.

## The Challenge

On conventional cranes the slewing motion is controlled by a system of slip-ring motors and rotor resistors, which doesn't work well at low speeds.

The sudden changes in torque between resistor steps waste energy and the system requires regular maintenance. When replacing the slip-ring motors with a modern drive system the results can be disappointing. It is almost impossible to control the swaying of a crane's load with a conventional speed-controlled drive system hence why a different solution was sought.

## The Benefit

The innovative solution provided cost savings by eliminating the need for an additional PLC.

And met all of the needs of crane builder – standard sizes, ease of programming and energy efficiency – and the needs of the user of exceptional reliability, flexibility in operation, ease of maintenance, safety and low spares requirement.

## The Solution

Control Techniques provided a turn-key service, including design, engineering, software & programming, the building the panels, final installation & on-site commissioning at IGMA Amsterdam.

Squirrel cage AC motors controlled the movements of the hoist/grab closing (2x160kW) driven by 2 double size 5 Unidrives, and the luffing (1x40kW) and slewing (2x 39kW) were driven by a 55kW Unidrive. It is a standard drive system configuration with a single quadrant rectifier and brake choppers.

A diode bridge rectifier supplies the inverters for hoist, slewing and luffing via a common DC-bus giving high reliability. Large brake choppers are required to convert potential energy stored in the hoisting system, or kinetic energy stored in the moving masses, into heat, since no regeneration into the grid can take place. The brake resistors are mounted outside the control panel. The crane control system requirements include slewing control, grab hoisting and closing and load dependent speed control on the hoist movement. The software functionality was achieved without a PLC, using the integrated software solution inside a plug-in programmable application module built-in to the drive.



Cost savings



Easy to maintain



Extremely reliable



Energy efficient



Easy to program

**Nidec**