

Drive & Motion **Solutions**

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Industry: Cranes and Hoists

Application: Materials Handling

Local Talent and Smart DC Drives Deliver The Goods

The largest cargo-handling and container terminal in Atlantic Canada, Halterm Ltd., Port of Halifax, Nova Scotia, turned to its local Control Techniques distributor for a complete retrofit of one of its cranes, an older DC Gen-Set that had been damaged by a fire. Halterm offers complete terminal services for the global shipping industry. Its system of nine gantry cranes operates 24/7/365, handling over 200,000 teu's (shipping containers) per year, and provides a direct inter-modul link from cargo vessels to trucks and rail lines.



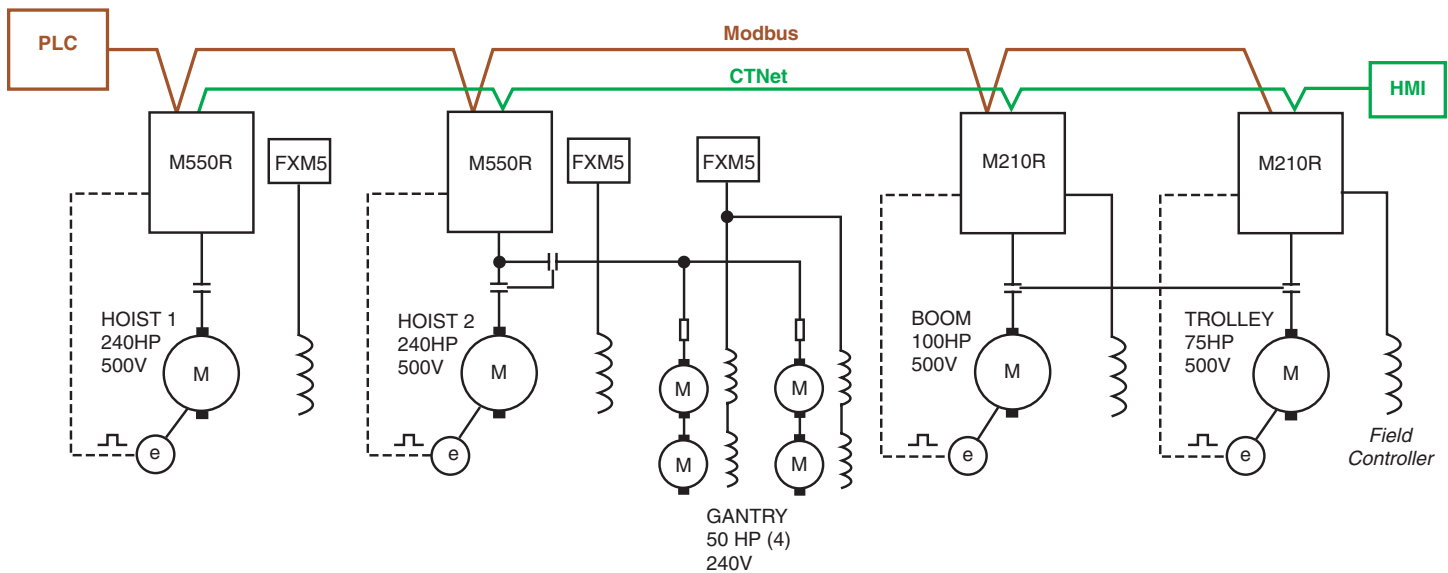
Control Techniques has years of experience in cranes and hoists, and is a leader in this market. Its innovative digital technology also provided the most cost effective solution for the DC retrofit. However, Halterm not only wanted a cost-effective, state-of-the-art solution, but the people and service that would make the solution work. Control Techniques was selected over two major drive vendors, because Halterm knew it would get more than boxes of drives and controls dropped at the door by its distributor. It knew their CT distributor would be there to work with their people--the power engineers, mechanical engineers, and control engineers, to see the job through start to finish.

The crane's control system, was designed and built at Control Techniques' Cleveland Drive and Systems Center. It features Mentor II DC drives, each equipped with an onboard MD29 application module to provide programmed intelligence. The larger drives utilize an outboard FMX5 field controller to optimize motor field current control. The smaller Mentor drives have the field controller built into the drive.

The completed crane uses two 240HP DC drive hoists, with a 55 ton lifting capacity under the spreader, and lifting speeds of 150 feet/min (rated load) and 360 feet/min (unloaded). One of the hoist drives also operates the four 50HP gantry motors, which have a travel speed of 150 feet/min. The 75HP drive trolley motor gives a dockside speed of up to 460 feet/min. and the 100HP boom has a hoisting time of 6 minutes. (See one-line diagram on following page.)

The distributed architecture of this crane control system is achieved with CT's fieldbus technology, CTNet, giving considerable savings in terms of the material used and the time required to install the electrical system, as well as the subsequent commissioning of the crane. This high-speed link is used by the hoist drives for load-sharing, and is connected to the other drives in the system and a CTIU HMI for diagnostics and maintenance. The drives are also connected via Modbus to the PLC for monitoring purposes.

Drive & Motion **Solutions** (continued)



Mentor II digital drives are rugged and reliable and can withstand harsh operating conditions. They are reversible to guarantee maximum speed control during acceleration and deceleration, and also provide energy savings with regeneration during braking. The Mentor II range of digital DC drives spans output currents from 25A to 1850A, with all sizes sharing the same control, monitoring and communications features. A comprehensive self-tuning algorithm gives improved current loop performance for a faster and more uniform response at all speeds. Drive performance is also enhanced with full PID digital speed control.

In this case, crane ‘productivity’ is achieved using a series of basic, modular and open-ended software packages, developed by Control Techniques, and programmed into the onboard MD29 application modules in the crane drives. The programmed routines optimize movements, trajectories, position location and load swaying, in order to relieve the operator of these delicate and repetitive tasks.

Control Techniques also has designed a set of diagnostics and maintenance modules and integrated these into its basic software. Operational at the various levels of automation, these software packages automatically signal events as they occur, assisting technicians with repair and preventive maintenance operations.

Control Techniques has an unrivalled worldwide network of Drive Centers and supports an even wider network of CT distributors with systems, programming, and technical expertise.

To learn more about how DC drives are powering specific applications, [click here](#).

To see the DC drive offerings from Control Techniques, [click here](#).