Metals

AUTOMATION
case study

Upgrade of Static Cut-off Machine Slashes Downtime at Corus

A replacement for a complex and unreliable control system for the Static Cut-off machine at Corus Pipes, Hartlepool has dramatically improved machine reliability and throughput at the works.

The Challenge

"The existing Mannesmann Demag system was obsolete and unreliable, with no support," comments Dave Watt, Senior Electrical Project Engineer at the plant with responsibility for the project. "The reliability was poor with the software and documentation difficult to follow. Replacement was needed urgently, but was far from straightforward. We asked Drives and Automation Ltd to recommend a solution and they put forward a scheme featuring drives and servos from Control Techniques."

Corus Tubes produces large steel pipes up to 24" in diameter at the Hartlepool plant. The overall plant efficiency is reliant on the operation of the Static Cut-Off machine which provides test samples of the finished pipe product for QA purposes.

The Solution

The replacement control system designed by Nottinghamshire based Drives and Automation comprised a Control Techniques Mentor M350A cutter drive, two Control Techniques Unidrive 25 HP (18.5 kW) servo-drives and new Control Techniques servo motors.

Each servo axis contained a Control Techniques applications module to provide position control over each X and Y axis as well as high-speed communications using CT-Net. Cutting profiles for each product were generated and stored on the Applications module with programs being selected via a touch-screen. A PLC and touch-screen HMI were provided for operator control / menu selection.

Finished tubes are fed into Static Cut-Off machine by a set of in feed conveyors. The pipe is gripped by clamps and a circular cutter head with tungsten carbide tips mounted on the inner diameter is rotated by the main cutter motor at a speed defined by the product.

The X and Y axes move the rotating cutter blade, using two servo motors, in an ellipse around the pipe, thus cutting into the pipe and providing the sample required. Profiles differ for each tube diameter and wall thickness and each motion profile is pre-programmed into the Applications modules. The whole cutting process takes a matter of seconds.

KEY BENEFITS

- Increased throughput
- Improved reliability
- Significantly reduced downtime
- Straight forward set up procedure & operation
- Simplified maintenance

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