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## Smart ABB drives deliver accurate positioning for Corus

When pneumatic positioning systems failed to provide the accuracy needed for steel company, Corus Colours, systems integrator Boulting Technology turned to ABB's high-performance machinery drives to provide a solution. The drives' on-board intelligence and ability to interface with different positioning devices enabled Boulting Technology to provide an extremely compact, accurate, repeatable and cost-effective solution.

The 0.75kW drives are used on four positioning systems at the Corus Colors Shotton Works on Deeside. "We are able to program the drives to fit the requirements of each operation exactly in terms of speed, acceleration, deceleration and end of motion," says Nick Bennett, senior project electrical engineer at Corus. "One of the main benefits is their reliability. We don't have to keep adjusting them, whereas we continually had to adjust the old pneumatic systems. The drives have also solved a health and safety issue by reducing manual handling."

The positioning systems are part of the coiling operation at the plant. A major customer wanted Corus to provide its steel coils wound around cardboard tubes, so Corus needed a way of automating the loading of the cardboard inners onto a mandrel ready for winding. "The tubes are not particularly heavy but they are awkward to handle because they are 1.5 metres long and around half a metre in diameter," added Bennett.

In the automated system, the tubes slide onto a saddle-shaped arm which then swings round to align with the mandrel. Once there, the tubes are pushed into position ready for winding.

Bennett also pointed out that the rest of the loading operation worked well, but the swinging motion of the arm proved to be an issue, "The problem is that the rotating system has a non-linear load. The load exhibits stiction and so additional torque is required to start the arm moving. The new drive system control continuously adjusts the torque and speed to achieve the required motion profile. This is difficult to achieve with an air cylinder because you can only make adjustments to the pneumatic system between operations, not during them."

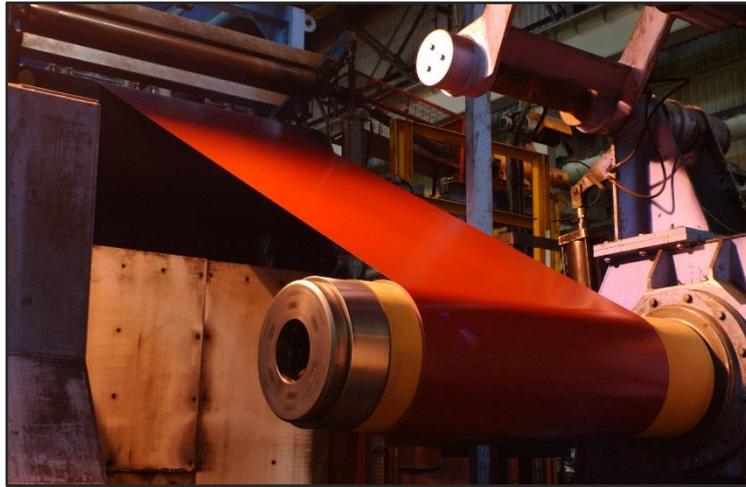
Each drive at Corus interfaces with two encoders. A TTL encoder monitors the motor and provides the feedback to control the speed of the arm. An absolute encoder on the load side monitors the exact position of the arm, so the drive always knows precisely how far round it has swung. ABB has designed its machinery drive to interface with up to three types of encoder in a single, compact module.

Most drives would require a separate PLC controller to produce the kind of complex motion and positioning control needed at Corus, but the onboard intelligence and programming capability of the advanced ABB drives eliminated the need for new PLCs. "We couldn't have done it this way without the programming capability," says Boulting Technology's engineer Phil Martin. "The modular programming blocks made the drive easy to use, and it made life much easier to put the control intelligence in the drive."

ABB high-performance machinery drives provide speed, torque and motion control for a wide range of demanding machines. They can control induction, synchronous and asynchronous servo and high torque

motors with various feedback devices. The compact hardware and programming flexibility ensure the optimum solution, while the innovative memory unit concept enables flexible drive configuration.

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**Caption:** ABB's high-performance machinery drives with on-board intelligence enabled accurate positioning for Corus.

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