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## Component maker saves 28 percent on energy bill with an ABB drive

Some 28 percent has been cut from the running costs of a metal bending machine, operated by component manufacturer, voestalpine Metsec plc of Oldbury, West Midlands, following the retrofitting of a variable speed drive (VSD).

The VSD controls the speed of the motor used by the hydraulic pump on the machine, saving energy during non-active times in the cycle.

voestalpine Metsec is keen to improve its energy efficiency and was attracted to the proposal of AAR Powerdrives to conduct an energy appraisal of its plant to identify applications that could benefit from using VSDs.

“As we spend around £40,000 a month on electricity costs, we are keen to be more energy efficient but want proof that any proposed system or solution will work,” says voestalpine Metsec’s Maintenance Manager, Eddie Raymond.

AAR Powerdrives conducted an appraisal, looking at machine running hours, energy costs, VSD costs and the energy and CO<sub>2</sub> it could save over one, five and 10 years together with the payback time. With the help of voestalpine Metsec, AAR Powerdrives identified an Addison metal bending machine that would be suitable for a drive application.

“The machine makes frame components for the cabs of JCBs,” says Raymond. “This was suitable because of the high idle times the machine has in its cycle. Depending on the parts being manufactured, the component can take anything from 20-40 seconds to make. As an example, for a component that takes 20 seconds to form, there can be 30-40 seconds of idle time, accounting for some 60 percent of the total cycle time.”

The machine’s energy appraisal showed that the average current drawn was between 14 A and 18 A, reaching a peak of 46 A at the start-up of the pump. Following installation of the drive, the average current reduced to between 10 and 13 A, with a start-up peak of 34 A. This was a saving of 28 percent of the energy used by the machine.

AAR Powerdrives supplied, installed and commissioned a 22 kW ABB ACS550 drive for the permanent installation. The full load speed was slowed by 17 percent to 1,185 rpm and the no load speed was slowed by 42 percent to 830 rpm.

A challenge of the application was to receive the signal from the bending machine to initiate the motor to start the hydraulic compressor.

“Initially, we used a pressure switch but we could not find the correct place on the hydraulic pack to get the right signal,” says Raymond. “We found that the drive was ramping up and down continuously, causing the part that is being bent to distort and go out of tolerance.

“To cure this, we moved to a timer on the drive. The machine controller sends an “in cycle” signal to the drive. When this signal is not present, the drive is in idle mode, which is the case for 60 percent of the

time. After receiving this signal from the machine, the drive waits for two seconds then ramps up the speed for the motor.

“Sometimes the operator would press the cycle start and then finds that he wants to pause the cycle due to the part slipping between the jaws. The two seconds is the check time to allow the cycle to get in full motion and ensures the part is at the correct angle for bending.”

“As well as the energy saving, the lower pressure on the hydraulic system meant less heat build-up, giving a better lifetime, and less noise. The oil is also now lasting longer,” says Raymond. “We also predict a longer life for the motors as they are not running at full speed constantly as previously.”

Voestalpine Metsec is converting four more of its machines to VSD operation over the next few months, with a total of 50 machines being candidates for drive installation.

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**Caption:** voestalpine Metsec is saving 28 percent on its energy bill after retrofitting an ABB variable speed drive on a metal bending machine.

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