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ABB drives save £80,000 a year for plastic extruding company

An £80,000 reduction in its annual electricity bill is estimated by a manufacturer of extruded plastic products, following the installation of ABB AC motors and low voltage AC drives.

Alma Products, based in Runcorn, Cheshire, supplies extruded plastic products to the food industry. Operating in a highly cost-conscious market, Alma was facing rising electricity costs that threatened to make it less competitive.

David Green, engineer manager with Alma, asked ABB Motor Service Partner, Quantum Controls, to look at the energy use of its extruders and recommend options for cutting the company's energy consumption. The extruders were running in a DC drive system which drew a load whether it was required or not, because DC motors draw a current even while producing zero torque. The maintenance cost of the DC motors was also an issue, as it far out weighed the AC motor option.

As the project was proposed for Carbon Trust funding, a precise energy save reduction had to be obtained for converting from DC to AC on the extruder lines. Alma Products obtained two 'estimates' from other manufacturers, these had a savings difference of nearly £60,000 per annum between them.

Quantum Controls were approached for advice and a hire trial was proposed to prove the savings before committing to a purchase and the Carbon Trust funding.

One of the DC systems was monitored by Quantum Controls over a two week period with a 3 phase energy data logger on the input supply to the DC system. Quantum Controls then fitted a temporary ABB 132 kW AC drive and ABB 132 kW motor and monitored it for a further two weeks for comparison.

The test results showed that the AC drive had saved just over 25 percent of consumed energy compared to that of the DC drive system. This would give an estimated total saving of over £80,000 when all four main extrusion lines were converted to AC drives.

Peter Stelling of Quantum Controls says: "We recommended an AC drive in place of the DC drive as it would give maintenance savings and energy savings, as the AC drive system is more efficient than that of the DC."

Following the tests, Quantum Controls was awarded the contract to fit motors and drives on all four extruders. The project was funded by a £100,000 loan from the Carbon Trust. "Quantum was extremely helpful," says Green. "They wrote the application for the Carbon Trust loan to suit our requirements. We were very pleased with the performance of Quantum."

The drives are fed from 4 to 20 mA signals from pressure transducers before and after the extruder pump. The signals provide for speed control in order to maintain the correct back pressure. This ensures that the correct amount of material is being fed to the extruder and there is no danger of over pressures causing damage to the machine.

Overall, Green expects a two year payback on the project.

“There is another potential benefit of the drives installation, in that it gives us more information on what is happening with the process,” says Green. “In time, this will help us calculate throughput and gives us a better idea of the load the machine is handling and how efficiently we are making use of its production capacity.”

Alma intends to use Quantum Controls for an expansion of the project to other extruders and other companies in the group may also use them.

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Caption: ABB drives and motors save £80,000 a year for plastic extruding company.

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