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Tata Steel saves 7400 MWh with ABB DriveSave

A plant-wide series of energy saving projects has saved more than 7,400 MWh a year from Tata Steel's energy use at its Port Talbot steelworks. Altogether 62 ABB variable speed drives (VSDs) were installed ranging from 15 kW to 200 kW.

Conducted by ABB, the projects were performed as part of the ABB DriveSave programme, which guarantees that users will achieve a specified level of energy savings.

ABB DriveSave is aimed at industries like metal processing, chemical, oil & gas and pulp & paper which are willing to make significant investment across many applications on a site to achieve targeted savings, totalling 1,000's of MWh and above per year, with a return on investment in under three years.

In addition to the guaranteed energy savings and the design, installation and commissioning of the VSD scheme, DriveSave offers a five year warranty for all of the installed drives, together with a five year preventive maintenance programme.

ABB's John Guthrie says: "We have worked with Tata Steel for a long time on energy saving applications. Tata knows ABB and what we can do, so they know that VSDs can save energy and that we work in partnership with our customers.

"The main driver for Tata Steel was that this was one project, meaning a single purchase order. The local areas of the plant do not have their own capital expenditure budget for this amount of work, so this represented an easier solution for them rather than finding other capital for them.

"What makes DriveSave special is the performance guarantee; so the customer can look at this as purchasing energy saving. It is also attractive to Tata Steel because the savings guarantee means ABB shares the project risk and allows them to penalise ABB for under achievement and reward a bonus for over achievement."

James Davies, Senior Electrical Engineer, Energy Department, for Tata Steel, says: "We have used large drives in the past and wanted to use drives on smaller applications. However, our site engineers did not have the time available to assess these applications and fit the appropriate drives to suit them.

"This is where the DriveSave project proposed by ABB was attractive – ABB would manage all these smaller projects for a total money value rather than doing them piece meal."

Tata Steel allocated two central engineers to assess which applications would benefit. These engineers worked with ABB to choose the final list of applications.

Says Guthrie: "A wide range of different applications were chosen for the project. These were mainly pump and fan applications, chosen for criteria such as ease of accessibility and being part of a duty/standby arrangement rather than being in constant use. This meant they could be improved by adding VSDs without disrupting production."

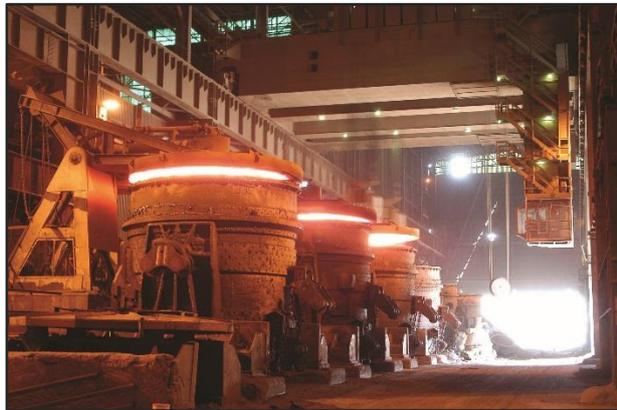
On one particular application, gas recirculation fans used in the site's power plant, Tata Steel achieved 60 percent energy savings. Replacing the original hydraulic fluid coupling control with VSDs also reduced the maintenance requirements of the fluid coupling.

Another improved application was the multi-pump systems used to move effluent from processes and drainage throughout the site. Existing systems were controlled in an on-off regime using float switches to control the liquid levels in reservoir tanks, controlling the pumps in each tank in a batch process. VSDs were installed on all these pumps, together with ultrasonic level control sensors communicating via the existing PLCs to instigate continuous level control on the tanks.

Other applications included cooling fan systems in the Hot Strip Mill and Strip Drying fans in the Cold Rolling Mill, which benefitted from reducing oversizing and linking fan to process line speed rather than have the fans running at 100 percent speed all of the time.

Adds Davies: "We had regular meetings with ABB, who were very flexible about how they managed the various projects to avoid disruption. We have also reduced our maintenance effort due to the replacement of some obsolete motors and starters."

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Caption: Tata Steel, Port Talbot is saving 7,400 MWh a year after installing 62 ABB variable speed drives.

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