CONTROL TECHNIQUES

MAINTAINING THE PRESSURE

GERMAN ALUMINIUM PLANT | METALS

DRIVE OBSESSED

REDUCED DOWNTIME = THROUGHPUT INCREASED 10%

When a German aluminium plant in Alcoa, Hannover upgraded their extrusion line the company chose to install Control Techniques variable speed drives.

The Challenge

The two biggest extrusion lines accept billets of aluminium alloy of around 265mm and 412mm diameter and lengths between 400 & 1350mm, pre-heated to between 300 & 550°C.

The billets are then extruded through two high pressure extruding presses at 56 MN and 33 MN respectively. Both extruders are hydraulically-powered, with the oil pressure of 250 Bar being generated by pumps. The pumps on the original hydraulic plant sent additional oil through a by-pass to give the required thrust, so they effectively ran at full speed all of the time, which is very inefficient.

The Solution

The plant installed six Nidec 160 kW Unidrive SPM modular drives, which integrate with the hydraulic controller using Profibus & give exactly the required power at every stage of the operation.

This saves 40% of the power and provides better control, giving improved quality of extrusions. The extrusion press produces 800-900 tonnes of aluminium extrusions per month, operation runs 24 hours a day, 365 days a year, so the installation was carried out with the line in full operation.

The Benefit

The plant (the valves, pumps, pipes and seals) is less stressed, equipment is less susceptible to breakdown, decreasing maintenance costs & increasing production time availability, and throughput has increased by around 10% because of reduced downtime.

The oil lasts longer too, a large saving as the machine uses 15,000 litres of oil and 6,000 litres passes through the system during each extrusion (it is then cleaned and returned). The installations have cut energy consumption by a huge 40%, saving thousands of kilowatt hours of energy every year.

"We particularly like the new modular Unidrive SPM drives", Herr Stefan Heine, who has responsibility for technical operations and purchasing at the plant, explained. "They are extremely compact and easily fitted into our plant room. We like the Unidrive SP range generally and routinely use SmartCards to speed up the setting of parameters when we install a new drive. Most of the drives in our plant are connected by Profibus to the factory management system."

Energy saving

Compact drives

Increased throughput

Lower maintenance costs