

Hydrovane reduces compressed air maintenance costs at aluminium refinery

Thirty-three 37kW Hydrovane compressors have helped global aluminium producer, Alcoa, to increase productivity and lower maintenance costs at its refinery in San Ciprián, Spain.

Benefits-at-a-glance

- Hydrovane provided two trial units for Alcoa to test before making the investment in new equipment
- Reduced incidents or failures of the compressed air system during metal casting operations
- Requirement for oil changes reduced by 75% - due to oversized oil chamber
- Reduction in man-hours devoted to equipment failures
- Consistent air pressures to ensure no loss of production, particularly during casting operation



Application Details

Alcoa is a global company dedicated to the production and sale of aluminium. The refinery in San Ciprián, situated on the coast of Lugo, focuses on the production of primary aluminium from the raw material 'bauxite'.

Within this complex, bauxite is transformed into alumina through the 'Bayer' process and subsequent conversion of the alumina into liquid aluminium by an electrolytic process.

Hydrovane compressors are installed on the overhead gantry cranes working above the electrolytic cells.

The compressed air is required at the refinery to actuate pneumatic cylinders within multiple machine tools, for fluidisation in the transport and loading of alumina and for the removal of liquid metal (casting) from tanks by the venturi vacuum effect.

Miguel Ángel Román Calderero, Head of Plant Maintenance at Alcoa explains: "Our compressors are running for almost 24 hours a day, but it is during the casting operation when there is a greater requirement for air. To achieve a vacuum (known as the venturi effect), the pressure must not drop below 6 kg/cm²."

Customer
Alcoa

Location
San Ciprián, Lugo, Spain.

Application
Aluminium production

Product
33 units x 37kW
Purpose Build
Compressor Package

Customer Benefit
Increased productivity / lower maintenance costs



“ Since the installation of the new compressors, we have experienced a reduction in the number of incidents or failures during metal casting operations ”

Miguel Ángel Román Calderero, Head of Plant Maintenance at Alcoa

Plant Improvement

The existing Hydrovane compressors at the Alcoa refinery had been in use for over 30 years and were in need of repair or replacement.

Due to the complex nature of the application, Hydrovane conducted a site visit to review and assess Alcoa's compressed air needs. Following the results of the assessment, Hydrovane provided two trial units for Alcoa to test before making the investment in new equipment.

“The trial units suited our needs, particularly as it was a similar size to our existing compressors and offered ease of access to all parts of the machine”, says Calderero.

Reduced Maintenance

Following the successful trial, thirty-three 37kW bespoke Hydrovane units were installed on overhead gantry cranes at the refinery.

Calderero comments: “One of the key factors for installing the new Hydrovane

compressors is that the motor runs at just 1450 rpm. The alternative solution was a screw compressor running at 3000 rpm. The use of a screw compressor would have resulted in increased wear and maintenance costs, especially in an arduous environment such as alumina suspension, where high temperatures and aggressive gases exist.”

The Solution

The Hydrovane compressors are a purpose built package, with a bespoke base mounting for installation on to the gantry crane. The compressors' high rated starter is in an IP65 enclosure, which incorporates electronic control, with local and remote options and an alarm output.

The compressor package also features an oversized oil chamber to allow oil to cool quickly, a high flow fan with oversized cooler, remote cyclonic air intake filtration and motor specification that ensures the compressors can be operated efficiently within the refinery's harsh atmosphere and high temperatures.

CompAir Iberia is on hand to provide all of the necessary aftermarket service and support at the refinery, including all service kits, parts and lubricants.

Commenting on the benefits of the new installation, Calderero said: “Since the installation of the new compressors, we have experienced a reduction in the number of incidents or failures during metal casting operations.”

The new units' oversized oil chamber allows oil to be changed at 2000 hours, instead of 500 hours as with the previous units, which has reduced equipment downtime.

The preventative maintenance programme provided by CompAir Iberia has also resulted in a reduction in man-hours devoted to equipment failures.”