Automotive industry

Alloy Wheels International

Extreme temperature Y-bearing units

Extreme temperature Y-bearing units cut downtime

Alloy Wheels International (AWI) delivers products directly to prestigious carmakers, as well as supplying a range of wheels for the aftermarket and vehicle customising sectors. At the company's Strood site in Kent, over 5,000 wheels pass in batches through specially developed hardening ovens each shift, enabling customers such as Jaguar, Land Rover and Volkswagen to keep their production lines running 24 hours a day.

The hardening ovens are used to heat treat batches of up to 648 wheels, which are held in bespoke stillages or stands to maximise throughput and ensure that AWI can keep pace easily with customers' order requirements. However, AWI found that the reliability of its production operation was being affected by frequent failures in the bearings used in the conveyor that feeds the hardening ovens. As Dave Strong, AWI's maintenance superintendent, explains, *'The six bearings at the leading edge of the conveyor were regularly failing, with at least two bearings requiring replacement every week. This was caused by exposure to extremely high temperatures with repeated overheating every time the oven doors were opened.*

Although the oven itself is insulated and heavily lagged, the operation of the door effectively acts as a localised air knife, blasting hot air out of the apertures through which the conveyor shafts pass'.

The downtime caused by the bearing failures often amounted to more than half a shift every month, while on some occasions the bearing failure also caused damage to the conveyor roller, adding considerably to replacement costs and to the hours of lost production. Just as importantly, the bearing failures could lead indirectly to a fall in oven temperatures that in turn created the potential for production batches to be rejected and sent for re-smelting.

Dave Strong comments, *'Although the problem of the input conveyor bearings on the hardening oven had existed for some time, we had been unable to find a solution, despite the best efforts of our bearing supplier and lubrication specialists. Indeed, the problem was so regular that my maintenance team could change the units in the dark'.*

'I had previously used products from SKF and decided to call their engineers who advised that they had a range of special extreme temperature Y-bearing units. SKF arranged for samples to be sent to us for evaluation'.

The Y-bearing units were delivered for evaluation just before AWI's annual shutdown and fitted to one of the rollers on the input conveyor. Careful monitoring over the following weeks proved their reliability. Dave Strong continues, *'While the original bearings continued to fail, the SKF units just kept going. All the conveyor rollers in that working zone are now fitted with the Y-bearing units and, nine months on, are still running'.*

Y-bearing units are used in a wide variety of arduous applications. SKF's Y-bearing units are available in three different housing styles, with a choice of two designs. For extreme temperatures, grey cast iron housings are used with a choice of plummer block, oval or square flanged housings. Each unit comprises a deep groove ball bearing with a convex spherical outside diameter. The housing has a corresponding spherical seating.

The advantage of the spherical bearing seating is that it enables any initial alignment errors, between shaft and housing, to be accommodated.

SKF extreme temperature Y-bearing units

In addition, high efficiency seals protect the bearing even under the most extreme operating conditions, and each unit is lubricated for life.

Although it is difficult to quantify the exact savings that AWI has made by switching to the SKF bearings, Dave Strong believes that they have made a significant difference to the company's day to day operation. *'In particular, the savings made through increased uptime more than cover the initial extra outlay for the bearings and, more importantly, allow my maintenance team to focus on other issues, rather than having to repeat the same repair job over and over again'.*

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PUB CM/S6 10468 EN.UK · February 2010

Printed in England on environmentally friendly paper.