
Pulp & Paper industry

Iggesund Paperboard

CARB toroidal roller bearings

Bespoke bearing housings



SKF knowledge engineers solution for paper mill

SKF has helped Iggesund Paperboard, Europe's leading manufacturer of high quality virgin fibre paperboard, to optimise the productivity of its UK plant through a significant reduction in vibration levels. A totally bespoke dryer cylinder solution, incorporating SKF bearings, housings, seals and shafts, has provided Iggesund with substantial improvements in both performance and reliability, while at the same time simplifying essential maintenance.

Igesund supplies premium paperboard to the packaging and graphics sectors. The company prides itself on providing its customers with the best possible solutions for protecting their products and communicating their ideas, brands and values. Essential to achieving this objective is the ability to produce paperboard to exacting quality standards and within the agreed time frame to meet its customers' requirements every time.

Before installing the SKF solution, Iggesund was finding it impossible to operate its paperboard mill at the optimum capacity of 600 m/min without damaging shafts and bearings. Ted Hodgson, Mechanical Engineer at Iggesund, explained, 'We were running the mill at a reduced speed in order to minimise maintenance and downtime.

Whenever we tried to increase the speed of the system, we noticed unacceptable levels of vibration, particularly in the drying cylinders. As well as impairing the quality of our paperboard, this led to premature bearing failures. We couldn't risk damaging the bearings; to replace them we had to remove the entire shaft, taking a considerable amount of time and bringing production to a standstill'.

He continued, 'In the case of the idler gears on the dryer cylinders, the bearings were actually spinning in their housings as a result of the high speeds and loads they were frequently subject to. In some cases, this was causing the shafts to snap, costing us up to 15 hours production time in each instance. Likewise, we were having major problems with the bearings within the drying cylinders'.



'These bearings were on a rocker system to allow for movement, but when the steam filled cylinders became hot and expanded, the bearings couldn't take it and began to vibrate, affecting performance. We knew something needed to be done.'

To resolve the problem, Iggesund approached SKF for a solution. SKF's dedicated application engineers, with years of experience in developing applications for paper mills, assessed the situation and came up with a bespoke solution that could be installed without major alterations to Iggesund's existing equipment. The new solution would be able to cope with much higher speeds and accommodate movement and vibration, allowing production levels to be increased. Additionally, the new bearing units would be considerably faster and easier to change, with no need to remove the entire shaft.

The new idler gear bearing arrangement was made possible partly thanks to SKF's unique CARB toroidal roller bearing design, which combines the self-aligning capability of the spherical roller bearing with the unconstrained axial displacement ability of the cylindrical roller bearing. The rollers of the CARB bearing are self-guiding, meaning they will always adopt the position where the load is evenly distributed over the roller length, irrespective of whether the inner ring is axially displaced or misaligned with respect to the outer ring.

Igesund began to install the new bespoke units, which in addition to the bearings incorporated shaft, housings, seals and fixings, into the idler gears. As this new set-up could compensate for the angular

misalignment and axial displacement that occurred when the idler shaft expanded, the effect was immediate, reducing vibration levels by 120% and providing smoother, more consistent rotation.

Seeing the effect on the idler gears, Iggesund also asked SKF to develop a new system for the bearings inside its drying cylinders. Using its expert knowledge and latest technology, SKF was able to eliminate the problematic rocker system completely, suggesting a more stable arrangement. Once again, the company's CARB bearings played an integral role, as, unlike conventional bearings, they could cope with 5-6 mm of expansion and withstand temperatures of up to 200 °C, making them ideal for such an application. After installation of the new units, vibration decreased significantly and the speed of rotation could be increased with no damage to components.

Ted Hodgson is impressed with the results, *'The new SKF solutions have enabled us to get the mill up to maximum speed with none of the vibration-related problems we were experiencing previously. SKF's knowledge and support has been invaluable; in addition to coming up with the bespoke design, and supplying all the necessary components, they were on-site to help us install the first units and train our personnel.'*

'We're currently installing the new SKF units across the plant, which is time consuming due to the design of the previous system, but well worth it. We've modified 20 of 140 idler gears so far, and eight out of 70 dryers. The effects speak for themselves: no signs of excessive vibration or failure, just faster, more reliable performance.'



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PUB CM/S6 10607 EN.UK · February 2010

Printed in England on environmentally friendly paper.

