

SKF extends service life of bearings in textile processing machine by more than 3 times



A common challenge

As Northern India's leading textile maker, Nahar Industrial Enterprises Ltd. operates several modern manufacturing sites that spin, weave and process woollen, cotton and blended fabrics, garments and more. Faced with costly and recurring guide roller bearing failures in a range of pretreatment machines, Nahar looked to SKF for a solution.



The problem is common in textile production. Bearings in spinning and fabric processing machines operate in a high temperature environment exposed to steam, chemicals and caustic solutions. Guide roller bearings are also subject to damage from dynamic misalignment. Ultimately, bearing seal failures result, largely due to the effects of heat and chemical fumes.

In Nahar's case, heat, steam and chemical attack was causing premature ageing and failure of the seals, resulting in contaminant ingress, washout and degradation of the lubricant. Sometimes seals were even dislodged completely from the bearing. Steam was also causing the polymer cages inside the bearings to soften and jam, further contrib-

uting to premature failures and costly unplanned downtime.

Depending on their position on the machine, the bearings in Nahar's facilities were failing in as little as two months. During the shutdowns that followed, fabrics were often overexposed to chemicals, leading to dye variations, defective products and lost profitability.

Solution features

- Handles up to 1.5 degrees of misalignment
- Steel cage for increased heat and chemical resistance
- Sheet steel-reinforced NBR seal
- Bearing internal radial clearance increased to C4
- High-temperature grease with higher grease fill

Solution benefits

- Increased reliability
- Bearing service life increased by more than 3 times
- Greater machine uptime and productivity
- Reduced maintenance demands
- Lower operating costs
- Improved profitability

Application details

- Textile PTR machine: guide roller bearings in washer tanks/steamer chambers
- Speed: 70 m/min
- Operating temperature: 105 °C
- Inner ring rotation



A customized solution

SKF worked closely with Nahar to assess the application demands and determine the company's expectations. This confirmed that the sealed double row, self-aligning ball bearings as previously used were the right type for the application but that, to reliably achieve an acceptable service life under the prevailing operating conditions, they would need to be:

- Designed and manufactured to the highest standards with sufficient load and misalignment capacity (1.5 degrees)
- Made from highest quality materials
- Fitted with seals able to effectively retain lubricant and resist ingress of contaminants for the life of the bearing
- Filled with a long life grease able to offer adequate lubrication

SKF engineers next went about optimizing the basic bearing design to meet Nahar's requirements. They replaced the polymer cage with a steel cage to withstand caustic chemicals and high temperatures. They increased internal clearance to better handle misalignment and abnormal temperature spikes. They also chose a high-performance, steel-reinforced NBR seal to eliminate bulging and leakage, and used a long-life, high-temperature grease with improved water resistance in a higher grease fill volume.



The results

During an initial four-month trial period, the custom-designed self-aligning ball bearings significantly outperformed the old bearings, more than doubling service life.

The new bearings, at the time of this writing, have been operating trouble-free for 12 months, extending bearing life by 3 times and counting. Consequently, machine uptime has improved, reducing maintenance demands while boosting productivity and profitability. Pleased with the SKF solution, Nahar is in the process of replacing all guide roller bearings with the new SKF bearings.

© SKF is a registered trademark of the SKF Group.

© SKF Group 2015

The contents of this publication are the copyright of the publisher and may not be reproduced (even extracts) unless prior written permission is granted. Every care has been taken to ensure the accuracy of the information contained in this publication but no liability can be accepted for any loss or damage whether direct, indirect or consequential arising out of the use of the information contained herein.

PUB BU/S6 16033 EN · October 2015

Certain image(s) used under license from Shutterstock.com.