

Schaeffler Global Technology Solutions

Pulp and paper

Metso Paper, Inc., Finland

Coated Rolling Elements to avoid Slippage Damage in Calender Bearings

In 2004, the Finnish manufacturer Metso Paper, Inc. has delivered the PM 19 paper machine to Shandong Sun Paper Co. Ltd. in China. PM 19 produces wood-free fine paper grades with an annual production capacity of approximately 230 000 tons. Shandong Sun Paper Co. Ltd. was established in 1982 and has several paper and board machines with an annual total production capacity of approximately one million tons.

Challenge for Schaeffler

The calender consists of two pairs of rolls that are arranged one behind the other. In the top roll position, a combination of low loads of the spherical roller bearings and insufficient lubrication can cause damage to the raceways. The risk of bearing slippage – and thus the risk of slippage damage – had to be reduced.

Schaeffler Solution

Schaeffler has fitted the thermo rolls with FAG spherical roller bearings 23276-B-K-MB-C4-J48BB-T52BW-W209B with TRIONDUR coated rolling elements, which ensure a longer service life. The specification J48BB in the bearing designation refers to a diamond like carbon coating of the rolling elements. This extremely hard coating protects the bearing from damage even in sliding friction conditions resulting from slippage.



Technical Information about the Plant

Optisoft calender thermo roll

Paper grade:

Fine paper

Web width:

5 400 mm

Speed:

1 300 m/min

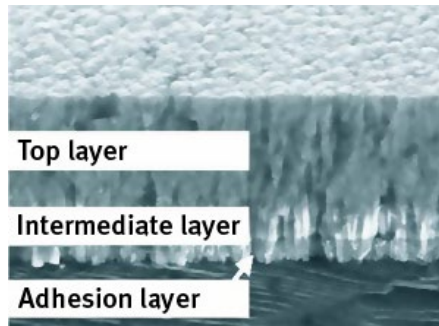
Production capacity:

230 000 t/a





FAG spherical roller bearings with TRIONDUR coated rolling elements



TRIONDOR coating system – a cost efficient measure for friction reduction



The TRIONDUR coated rolling elements ensure a longer service life

Customer Benefit

The Schaeffler solution provides increased protection from wear in slippage and mixed friction conditions, extending the bearings' service life in the thermo rolls and in addition the amount of maintenance required is reduced significantly.

In a three year period, this saves the customer approx. € 50 000

What's special

If the bearings had been designed for maximum load, they would be overdimensioned for use in the top roll, which is subjected to very low loads at times. In this position, slippage ($P/C < 0,02$) can occur, which – in combination with inadequate lubrication – can cause early damage to the bearings.

Technical Information about the Solution

Bearings:

FAG spherical roller bearings
23276-B-K-MB-C4-J48BB-T52BW-W209B

TRIONDUR-C coating:

J488BB (diamond like carbon coating)

Microhardness:

approx. 1100 HV

Coating thickness:

1-2,5 µm