

Schaeffler Global Technology Solutions

Pulp and paper

UPM Kymmene, Finland

The "ideal Floating Bearing" for a highly loaded Calender Roll

The Finnish customer produces magazine papers, newsprint, fine and specialty papers, as well as converted products and wood products.

Challenge for Schaeffler

Shortly after the paper machine was first put into operation, several bearings in the thermo rolls of the soft calender failed. Investigations showed that the main cause of these failures was the axial load that acted on the bearings. Due to this axial load, the two rows of rolling elements were loaded unevenly; as a result, bearings were failing prematurely.

Schaeffler Solution

An FAG spherical roller bearing 232/500-K-MB-J47AA-T52BW-C4, whose outer ring surface is provided with a PTFE coating, was mounted as the floating bearing. In highly loaded contact areas, PTFE ensures a very low coefficient of friction and thus good sliding properties. After the bearing had been mounted, a measurement of the axial load showed that the coefficient of friction had been reduced by more than 85 percent. The axial load acting on the bearings amounted to only < 10 percent of the radial load.



Technical Information about the Plant

PM4 Paper machine

Paper grade:

Fine paper

Production capacity:

160 000 t/a

Speed:

1 500 m/min

Nip width:

7 300 mm

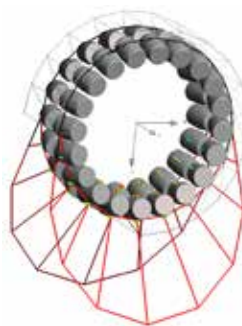
Max. thermo oil temperature:

up to 210 °C

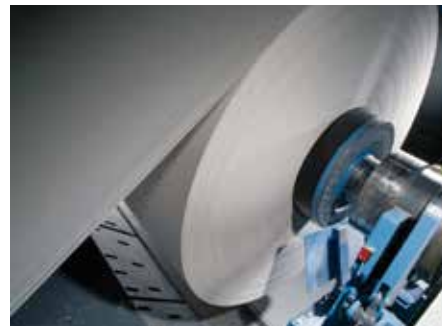




FAG spherical roller bearing



Load distribution of spherical roller bearings



Paper roll

Customer Benefit

Due to the reduced axial load, the service life of the bearings will be extended to at least five years. As standard spherical roller bearings are used at both ends of the roll, there is no need to keep large stocks, which means reduced stockpiling costs. In a five year period, this solution is expected to save the customer approximately 150 000 euros.

What's special

The PTFE coating has been used very successfully for years in mill applications in the processing sector. It was used for the first time for large, heavily loaded bearings in the pulp and paper sector.

Technical Information about the Solution

Bearing type:

232/500-K-MB-J47AA-T52BW-C4
(J47AA: PTFE coating on the outer ring OD)