

Schaeffler Global Technology Solutions

Plastics Manufacturing

RENOLIT SE, Germany

Efficient Monitoring of Calender Bearings

With more than 30 manufacturing locations and sales companies in over 20 countries worldwide, the **RENOLIT Group** is one of the leading international manufacturers of high-quality plastic films and related products for technical applications.

Challenge for Schaeffler

Repeated rolling bearing failures on various calenders at the location in Worms caused unplanned downtimes with corresponding production stoppages and costs. Schaeffler was given the task of developing a monitoring concept to improve the overall availability of the facilities. The challenges included the very slow roller speeds, high housing temperatures (up to 150 °C) and the difficulty of access to the measurement points during production.

Schaeffler Solution

The responsible Schaeffler sales engineer forwarded the inquiry to colleagues from condition monitoring, who developed two concepts matched to the customer's specific conditions. The first concept comprised the installation of an online condition monitoring system for permanent monitoring of the facilities. The second concept consisted of conducting regular recurring vibration measurements (offline strategy).

RENOLIT initially chose the offline strategy, which included the fixed installation of vibration sensors and the use of sensor switchboxes for querying the measurement data from a safe distance using a mobile vibration measuring system.



Technical Information about the Calenders

Number of calenders:

6 units, each with 4 calender rollers

Roller temperature:

Max. 220 °C

Roller bearing support:

Special rolling bearing assemblies on both sides

Radial bearings:

Double-row cylindrical roller bearings as special bearings, customized in assemblies comprising 2 or 3 bearings

Axial bearings:

- Double row angular contact ball bearing
- Deep groove ball bearing

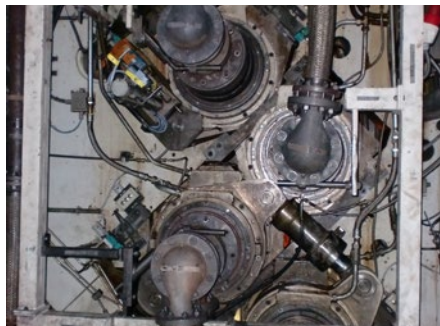
Preloading bearings:

- Cylindrical roller bearing
- Spherical roller bearing





Defining the measurement points



Calender bearing support non-drive side



Calender bearing support drive side

Customer Benefit

With the concept developed by Schaeffler, **RENOLIT** can closely monitor the condition of its calender rollers without interrupting production. Since 2013, six cases of rolling bearing damages have already been detected at an early stage using this concept. The affected bearings were replaced during planned maintenance activities and without any interruption of production.

If rolling bearing damage suddenly occurs during operation of a machine, this may result in a shutdown of the entire facility lasting several days.

The costs for such a shutdown are in the five-digit euro range. In addition, the data gained through vibration monitoring help to optimize maintenance processes in the long term.

A further advantage from the customer's perspective: With Schaeffler, **RENOLIT** has found a partner and solution provider, who can supply first-class rolling bearing products and services from one source.

What's special

The offline condition monitoring concept can easily be transferred to other calender stands and similar production facilities.

Precise positioning of the permanently installed sensors ensures that repeated measurements can be conducted according to occupational safety requirements. In addition, the concept can easily be expanded at a later stage to provide permanent online monitoring with multi-channel condition monitoring systems from Schaeffler using the sensors that have already been installed.

Technical Information about the Solution

Offline monitoring solution:

- Permanently installed sensors and sensor switchboxes
- 88 measurement points
- 178 monitored bearings

Schaeffler services:

- Regular offline vibration measurements
- Evaluation of data by certified specialists (acc. to DIN ISO 18463-2)
- Recommended actions for dealing with bearings showing irregularities