

Schaeffler Global Technology Solutions

Raw material extraction and processing

Sasin Mine Co., Ltd. Phrae, Thailand

Bearing Failure Analysis and Redesign Improves Plant Availability

Sasin Mine Co., Ltd., established in 2004, is located in the Phrae Province in northern Thailand. The company is engaged in exploring and producing barite for the petroleum drilling industry.

Challenge for Schaeffler

The customer claimed the quality of the FAG bearings inside his vibrating screen. This was based on the wrong presumption, that six bearings failed due to quality defects within only one month even though the expected service life was specified to be one year. The damage was detected due to high temperature development (above 100 degrees Celsius) and unusual noise during operation. The dismantled bearings showed signs of severe fatigue. Even after installing replacement bearings, changing the lubricant and applying it on a more frequent basis, the problems remained.

Schaeffler Solution

Schaeffler arranged an on-site visit to collect technical field-data from the malfunctioning machine. Based on their findings, an 'Official Bearing Failure Analysis Report' was created by the Schaeffler Technology Center in Bangkok. It revealed that the FAG bearings failed due to excessive axial loads. This was not due to the bearings being incorrectly dimensioned, but rather resulted from the fact that the bearing support did not allow a floating displacement on the shaft, which was identified to be the root cause of the problem. Accordingly, the special Schaeffler calculation software BEARINX was employed to optimize the design of the bearing arrangement. Following a redesign of the mating parts by the Schaeffler engineers, an appropriate locating / non-locating bearing arrangement was realized.



Technical Information about the Vibrating Screen

Type:

Circle-throw vibrating screen

Shaft speed:

1 100 rpm

Operating time:

24 hours/7 days

Production output:

40 tons/hour

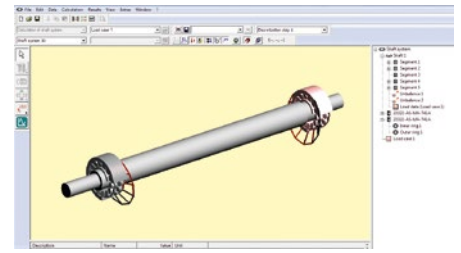




Vibrating screen at Sasin Mine site



FAG spherical roller bearing for vibrating screens



Shaft system modulation using BEARINX calculation software

Customer Benefit

With the help of the Schaeffler engineers, Sasin Mine improved the design of their vibrating screens, which led to enhanced durability of both the bearings and the machine. As a result, the bearing service life now exceeds the expected 12 months.

By applying the Schaeffler solution, Sasin Mine now saves money due to averted multiple (monthly) downtimes. In figures:

Hourly output per screen:	approx. 40 t	€ 2 000
Loss for 24 hours downtime:	approx. 960 t	€ 48 000
Maintenance time for bearing replacement:	1 day	€ 48 000
Repair time in the event of subsequent damage to shaft and housing:	2 days	€ 96 000

What's special

Sasin Mine was so satisfied with Schaeffler's service that it decided to strengthen its business ties with Schaeffler. In the future, all machines at Sasin Mine will be equipped with Schaeffler bearings exclusively.

Schaeffler has in-depth knowledge of the mining industry and offers tailor-made solutions. The portfolio comprises e.g. spherical roller bearings specifically designed for vibrating screens and a special lubricant, Arcanol VIB3, which is suited especially for oscillating bearings.

Technical Information about the Solution

Technical consulting:

- On-site inspection
- Submission of official bearing failure analysis report
- Redesign of the shaft and housing geometry (BEARINX)
- Technical advice
- Supply of special mounting and dismantling tools

Bearing:

FAG spherical roller bearings for vibrating screens (FAG 23322-AS-MA-T41A)

Maintenance tools:

- FAG HEATER40 (induction heating device)
- FAG Bearing Mate