Customer Success Story

We pioneer motion

Optimally mounted and aligned

Predictive maintenance for more process reliability

For the planned replacement of a large ball mill bearing, the maintenance team at Melon was looking for a solution for the plant in Puerto Montt. Ideally, everything should come from a single source. Schaeffler was chosen as the preferred partner. This is because Schaeffler can not only supply quality bearings, but also provides experts and tools for the safe mounting and dismounting of bearings as well as tools for the perfect alignment of the machines.

Result: Improved process reliability and customer satisfaction.

Customer benefits

- Schaeffler expertise in bearing selection, mounting methods and alignment of machine components ensures smooth operation
- Gentle mounting/dismounting of the large bearing, i. a. through inductive heating
- Simple and fast mounting/dismounting with the appropriate tools
- Precise alignment for more economical production
- Quality bearings for longer service life

Customer
Melón, Puerto Montt, Chile
Sector
Cement
Application
Bearing, motor, gearbox and pinion shaft
Solution
Mounting service, mounting/dismounting and alignment

What drives our customer ...

Challenge

At the Puerto Montt plant, a 14-meter-long ball mill grinds tens of tons of clinker into cement. In the process, pinions, gears and bearings are subjected to heavy stress.

The temperature of the machine must always be kept in check, as the very high comminution energies could lead to extreme heat generation in the grinding bowl. In order to avoid unplanned downtime here, the machine is serviced at regular intervals.

It is important for the maintenance team to carry out the maintenance work in a forward-looking, speedy and precise manner. Among other things, a large bearing was to be replaced during the up-coming maintenance work. Maintenance Manager Martin Llancafil sums it up as follows:

We had to ask ourselves if we should replace the large bearing ourselves or turn to experts. Since the correct mounting of the bearing and the exact alignment of the machine are decisive factors for the bearing life and the machine service life, we decided to go with mounting experts with the appropriate equipment for this task.

That is why Melón turned to Schaeffler.

Technical information for ball mill

Length	14 m
Diameter	4 m
Speed	14 rpm

What Schaeffler has to offer ...

Solution

Schaeffler has the right solutions for the requirements solutions and supported Melón with its expertise, service and the appropriate tools as follows:

Mounting service & expertise
Three Schaeffler specialists with many years of experience took over the maintenance work of the ball mill. This laid the foundation for professional mounting and dismounting of the large bearing and alignment of the machine.

Schaeffler mounting team: Isaac Galvez, Patricio Hernandez and Luis Miranda

Hydraulic puller for dismounting the bearing

Dismount
The first step in dismounting the old large bearing was to use a hydraulic extractor from Schaeffler, for which high extraction forces pose no problems. With its integrated hand pump and rotating, ergonomic pump lever, the workpiece could easily be removed from its position.

Checking the bearing clearance
Before the new bearing was mounted, the mounting experts inspected the bearing using the so-called JRI check to ensure the initial internal clearance in the bearing is greater than the operating internal clearance. This is because in operation it is usually important that the bearing has sufficient bearing clearance.

Note: Internal clearance is the dimension by which the two rings (outer and inner ring) of a bearing can be displaced without stress from one end position to the opposite end position in either the radial or axial direction when the bearing is not mounted.

Employee checks the bearing clearance.

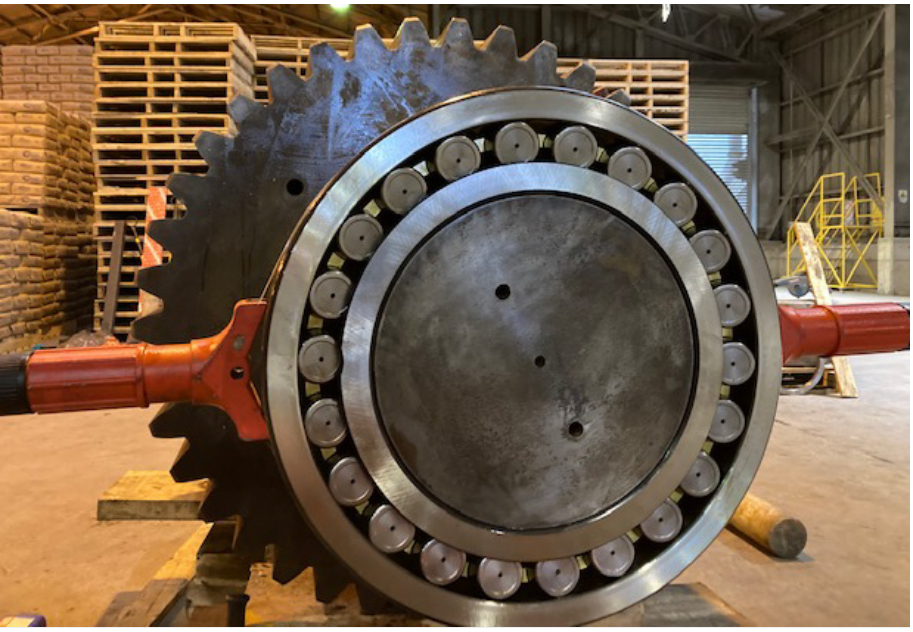
What Schaeffler has to offer ...

Solution

Preparation and mounting
To mount the new Schaeffler spherical roller bearing weighing 225 kilograms with an outside diameter of 620 mm, the mounting team decided to use the inductive heating device HEATER600. This can heat bearings weighing up to 600 kilograms. Induction heating at ideal temperature prepared the large bearing for professional installation. This process heated the bearing in a particularly gentle and also energy-efficient way, offering more safety to the personnel compared to other methods. One more reason for Melón to choose this method.

HEATER600 in the old design

Additional information: Induction heating is a fast and controlled heating method. It is more environmentally friendly and significantly more precise and safer than traditional heating methods such as ovens, oil baths or gas burners.



Tools
With the aid of the Schaeffler transport and mounting tool BEARING MATE, the bearing was mounted by crane at the appropriate location on the ball mill. This accessory not only prevented the inner and outer rings from swinging out of position, but was also able to remain on the bearing during the entire heating process with the HEATER600.

What Schaeffler has to offer ...

Solution

Alignment
The maintenance work also included the alignment of the machine elements. The ball mill is a ring gear mill drive.
Motors, gears and the pinion shaft are subjected to considerable stress. This can affect the backlash between the crown and pinion. Possible consequences could be unbalance or misalignment, and in the worst case, an unplanned shutdown. To avoid this, the rotating machine elements were aligned using the LASER-EQUILIGN. Its laser technology is preferred over measurement with a straight edge or dial gauge, as this measuring method is faster and more precise.

Alignment of the shaft with the alignment system LASER-EQUILIGN in the old design. Successor is the LASER-EQUILIGN2 with improved design, more functions and even more precise technology.

What's special

The customer is more than satisfied with the predictive maintenance work. The replacement of the large bearing and numerous other maintenance tasks were completed in only three days. Melón was also impressed by the additional services such as comprehensive lubrication advice.

And since Schaeffler also has more than 27 years of expertise in condition monitoring, Melón is launching a pilot with the OPTIME (CM) condition monitoring solution.

Products in use
Whether mechanical extractor, inductive heating device or laser alignment system – in addition to bearings, Schaeffler always supplies the corresponding service and equipment.

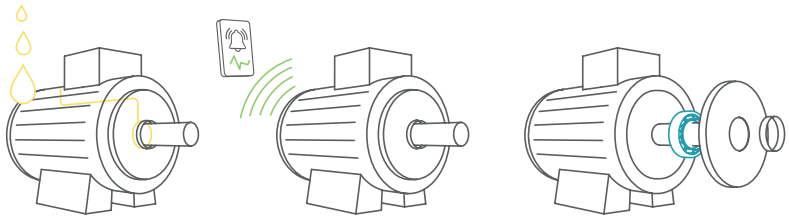
› medias.schaeffler.de/en/mount

What our customer says ...

We would never have believed that we could complete the extensive planned maintenance work in only three days. We are impressed by the in-depth knowledge and precise work of the Schaeffler mounting experts and the modern and extensive equipment. For us, one thing is certain: Schaeffler is our number 1 choice for the next maintenance work.

Martin Llancafil
Maintenance Manager, Melón

Mounting service as well as tools and systems are part of the Schaeffler Lifetime Solutions portfolio, which offers a comprehensive range of products, services and solutions for industrial maintenance. It is designed to support maintenance engineers throughout a machine's entire lifetime.
www.schaeffler.de/en/lifetime-solutions



Customer

1908: The first cement bag was produced at La Calera plant. This was the beginning of Melón's success story.
Today, Melón is one of the most important cement producers in Chile. With five cement plants and numerous concrete plants, the company produces around 1.2 tons of cement per year. To minimize CO_2 emissions, Melón uses natural and artificial aggregates such as pozzolan. The company also uses waste from industrial processes as an energy source.

Why Schaeffler?

- Technical expertise
- Friendly and knowledgeable customer service
- Quick and simple installation

Why this specific solution?

- Precise mounting and alignment
- Protection of bearings and machines
- Modern and environmentally friendly systems/tools

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