

Schaeffler Global Technology Solutions

Raw material extraction and processing

Robbins GmbH, Germany

Reconditioning of the Main Bearing of a Tunnel Boring Machine

Robbins GmbH is a subsidiary of US-based Robbins Company. Since 1951, Robbins has been engaged in the design and manufacture of tunnelling and mining equipment. From this time on, Robbins tunnel boring machines (TBM) have bored over 3 500 km of tunnel on more than 700 projects worldwide with machines ranging in diameter from 1.6 to 14.4 metre. The company generates annual sales in excess of US\$ 100 million.

Challenge for Schaeffler

After finishing a tunnel boring job in Iceland, the customer wanted to subject a tunnel boring machine to a full inspection and reconditioning. The reconditioning of the main bearing – which had been made especially for this tunnel boring machine – was of particular importance. Delivery periods for new TBM main bearings amounted to about two years at that time.

Schaeffler Solution

The bearing was sent to Wuppertal (Germany) for reconditioning. After it had been cleaned carefully, the reconditioning experts of Schaeffler examined the bearing thoroughly and defined the necessary operations. Immediately afterwards, the reconditioning work was carried out by experienced experts. Only eight weeks after the bearing had been delivered to Wuppertal, the reconditioning work was completed, and the bearing had been restored to a quality that was comparable to that of a new bearing.



Technical Information about the Plant

TBM Main Bearing

Outside diameter:

5 200 mm

Mass:

25 t

Shield diameter:

10 m

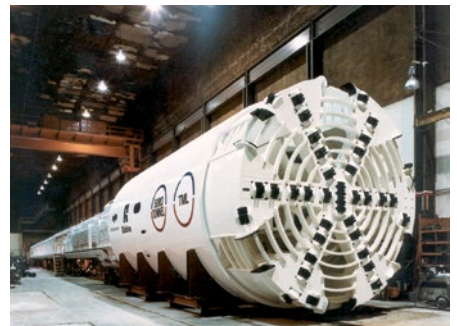




Regrinding of raceways



Setting up grinding machine



Tunnel boring machine

Customer Benefit

By having the bearing reconditioned, the customer realized considerable savings in terms of both cost and time:

Saving potential	
Cost savings compared to the cost of a new bearing:	approx. 60 %
Time savings compared to the delivery period for a new bearing:	> 90 %
The reconditioned bearing was delivered to the customer on the agreed date so that it was available again in time for the next tunnel boring job in China.	

Technical Information about the Solution

Reconditioning (Level III)

- Dismounting, cleaning, examination
- Definition of the amount of material to be removed by regrinding
- Sand blasting of the non-functional areas
- Regrinding of the radial and axial raceways
- Regrinding and/or honing of the rolling elements
- Preservation, mounting, packaging

What's special

Almost all TBM bearings can be reconditioned. The only restrictions are those imposed by the available grinding capacity (diameter).