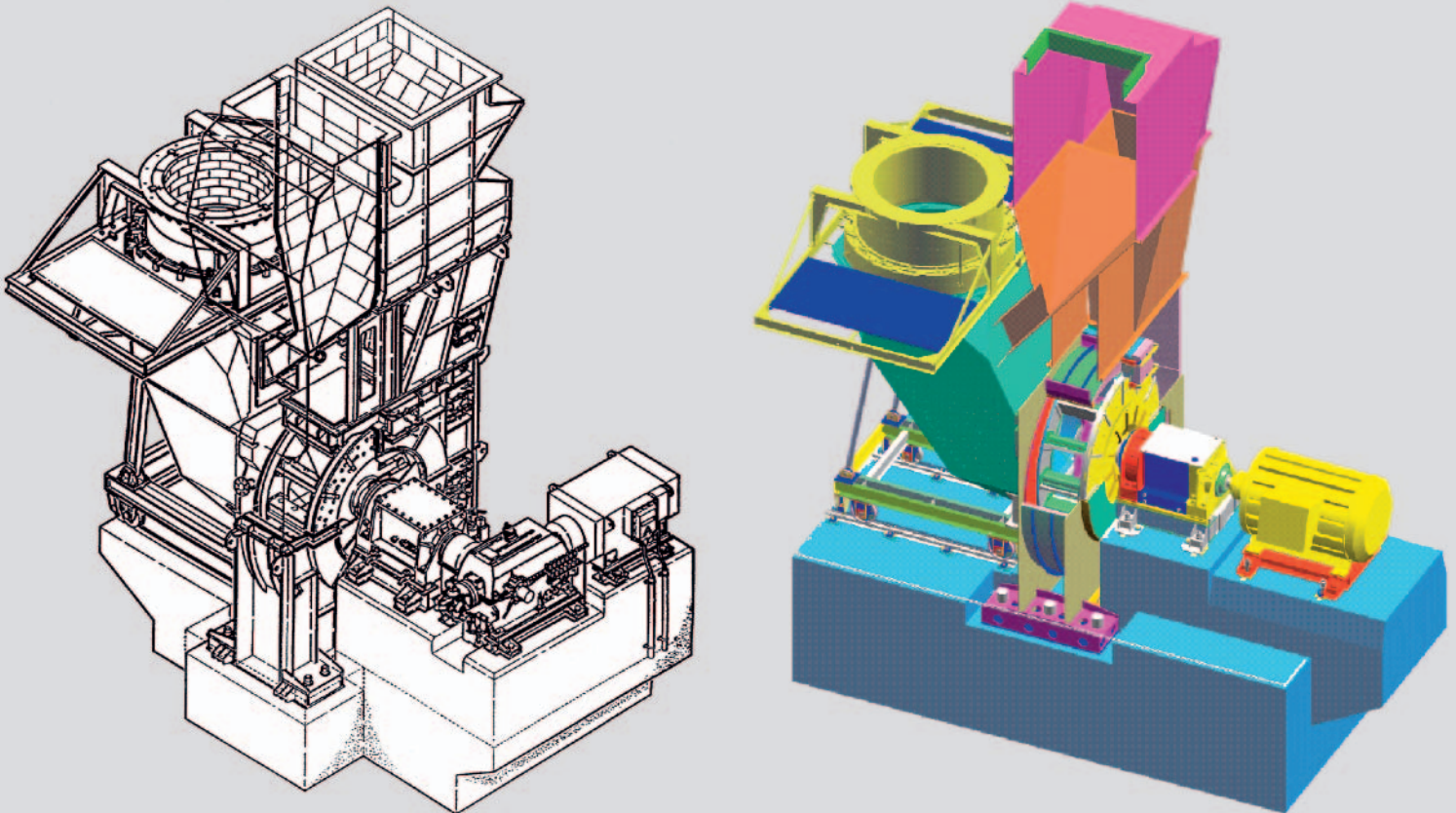


Rolling Bearings in ALSTOM Beater Wheel Mills



Examples of Application Engineering

WL 21 514 EA



Model of beater wheel mill N 200.45 built by Alstom Power Stuttgart

The beater wheel mills built by ALSTOM Power Stuttgart are designed for maximum productivity. In nearly all major atmospheric, -lignite-fired steam power plants, the crude lignite is dried and pulverised in ALSTOM beater wheel mills.

The beater wheel mill sucks hot flue gases from the combustion chamber through the flue gas pipe to dry the coal and blows the lignite/gas mixture through the pulverised coal pipes to the pulverised coal burner and to the combustion chamber.

In the beater wheel, the lignite is pulverised primarily in the region of the inner edges of the impact plates. At the same time, the pulverised lignite is mixed thoroughly with flue gas, resulting in a high drying efficiency due to the abrupt increase in the surface of the lignite particles.

Cantilevered mounting

The beater wheel is cantilevered. This unilaterally open construction offers the advantage that all mill parts that are subject to wear are easily accessible and can be replaced within a short period of time.

Locating bearing/floating bearing function

Compensation for length variations resulting from the thermal expansion of the shaft is achieved by providing a sliding fit between the bearing's outer ring and the housing bore at the drive end.

The shaft is axially fixed by the locating bearing.

Beater wheel bearings

The bearings have to meet stringent requirements. FAG spherical roller bearings of series 241 are used for this application to safely accommodate the stresses resulting from external load and beater wheel imbalance.

Locating bearing:

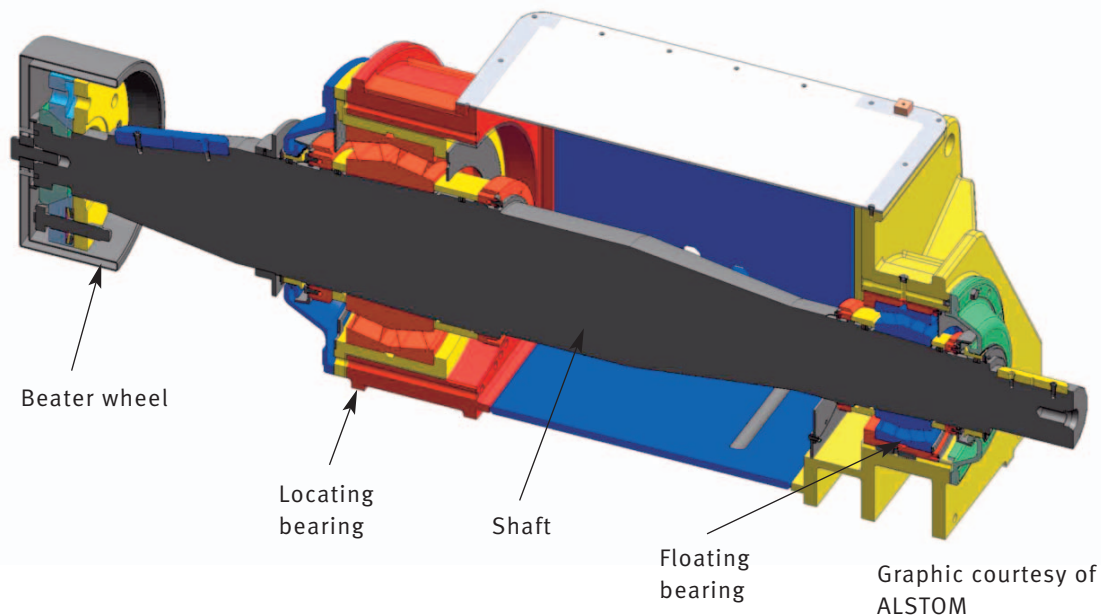
24192-B-K30-MB-C3

Bore diameter	d = 460 mm
Outside diameter	D = 760 mm
Width	B = 300 mm
Dynamic load rating	$C_r = 7\,500$ kN

Floating bearing:

24160-B-K30-C3

Bore diameter	d = 300 mm
Outside diameter	D = 500 mm
Width	B = 200 mm
Dynamic load rating	$C_r = 3\,250$ kN



Demands on the bearing concept and on the bearing design

- Accommodation of the radial and thrust loads (beater wheel and imbalance)
- Compensation for shaft length variations under load
- High load rating in a small mounting space
- Compensation for misalignments (shaft deflection, production tolerances)
- Service life demanded by the manufacturer
 $L_{h10} > 100\,000$ h.

Lubrication

Depending on the operating conditions, the beater wheel mills are equipped with an oil sump or circulating oil lubrication system.

Synthetic lubricants (to ISO VG 680 or VG 1000) are used to ensure a high level of operational safety of the machine and the bearings used.

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