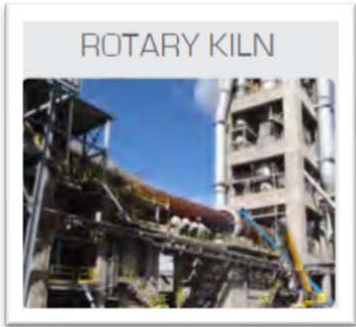


URB GROUP



Introduction

Bearings for cement industry are designed to answer the requirements of the cement industry such as: high temperatures, debris, heavy loads and corrosive environments. The cement making process has applications such as the Rotary Kilns, clinker coolers, Roller presses, vertical and horizontal mills, conveyors, etc.

Machinery/Equipment	Operating conditions	Requirements for bearings
<p>Conveyors</p>  <p>Conveyor belts move the ore from one machinery process to another. Conveyor performance is often a major concern for mining and mineral processing companies.</p>	<ul style="list-style-type: none"> - Heavy duty - Shock loads - Harsh working environments 	<ul style="list-style-type: none"> - High load-carrying capacity - Wear resistance - Black-oxide coated - Low noise and vibration
<p>Kilns</p>  <p>The kiln is used to make cement clinker and iron ore pellets and is critical to the iron and cement making process.</p>	<ul style="list-style-type: none"> - High temperature - Non-stop smooth working 	<ul style="list-style-type: none"> - Special heat treatment - Increase capacity of bearings -Wear resistance
<p>Mills</p>  <p>Grinding mills are used to pulverize the ore material and are exposed to quite severe environments.</p>	<ul style="list-style-type: none"> - Hot and cold temperature - Heavy loads - High moment loads - Extreme debris - Heavy shocks and vibrations 	<ul style="list-style-type: none"> - Optimized internal geometry - Sealing design - Special heat treatment - High load-carrying capacity - High operational reliability - Customized bearings
<p>Roller press</p>  <p>The roller press is specially designed for grinding clinker and raw meal.</p>	<ul style="list-style-type: none"> - Extreme heavy loads - Low speed - Contaminated environment 	<ul style="list-style-type: none"> - Sealing design - High axial and radial capacity - Black-oxide coated - Low noise and vibration

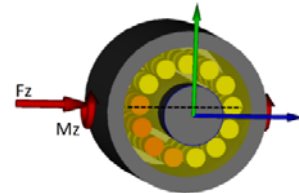
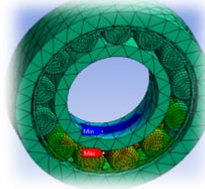
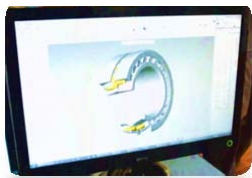
Research and development

URB's engineers are very familiar with the requirements of this sector and have successfully developed solutions for numerous cement machinery manufacturers.

Optimizing interior construction is performed using specialized simulation programs "Mesys Rolling Bearing Calculation" and "Shaft Mesys Calculation". These programs calculate the lubricant film thickness in elastomeric - hydrodynamic contacts optimizing quality finished surfaces extending bearing durability in severe working conditions.

For special applications used ANSYS Mechanical software that enables parametric studies, simulation of operating conditions and optimization the bearing design in requirements of use set.

Bearings for special applications are designed to withstand high loads, misalignment, shock and other heavy duty bearings using high quality steel with optimum mechanical properties and purity.



Commonly used bearing types in cement industry:

STANDARD BEARINGS

Deep groove ball bearings

Size range: 30 mm ÷ 300 mm (outer diameter)

Series: 6200: 6200 ÷ 6240

6300: 6300 ÷ 6317

6400: 6400 ÷ 6410

6000: 6000 ÷ 6032

Application:

- Fans
- Crushing
- Conveyers
- Blending



Angular contact ball bearings

Size range: 30 mm ÷ 250 mm (outer diameter)

Series: 7200: 7206 ÷ 7208

7300: 7308 ÷ 7323

Application:

- Crushing
- Grinding
- Blending



Cylindrical roller bearings

Size range: 35 mm ÷ 400 mm (outer diameter)

Series: NU: NU2xx, NU3xx, NU4xx, NU22xx, NU10xx
NJ: NJ2xx, NJ3xx, NJ22xx
NUP: NUP2xx, NUP3xx, NUP22xx
NN: NN30xx
NNU: NNU49xx,

Application:

- Vertical mills
- Kilns
- Horizontal mills
- Material preparation



Spherical roller bearings

Size range: 80 mm ÷ 620 mm (outer diameter)

Series: 213xx
222xx
223xx
231xx
232xx
240xx
241xx

Application:

- Vertical mills
- Roller presses
- Ball mills
- Kilns
- Vibrating screen



Taper roller bearings

Size range: 42 mm ÷ 300 mm (outer diameter)

Series: 30xxx
31xxx
32xxx
33xxx

Application:

- Vertical mills
- Ball mills
- Crushing
- Conveyers
- Blending



Thrust ball bearings-Single direction

Size range: 24 mm ÷ 420 mm (outer diameter)

Series: 511xx
512xx



Application:

- Crushers

Spherical roller thrust bearings

Size range: 32 mm ÷ 200 mm (outer diameter)

Series: 292xx
293xx
294xx

Application:

- Crushers
- Roller presser



Self-aligning ball bearings

Size range: 42 mm ÷ 300 mm (outer diameter)

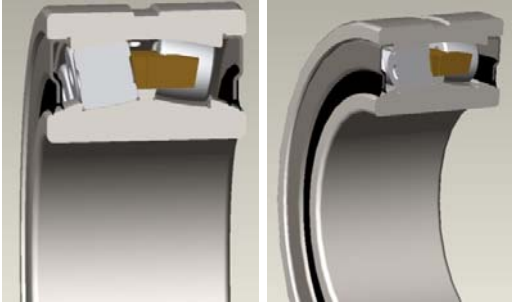

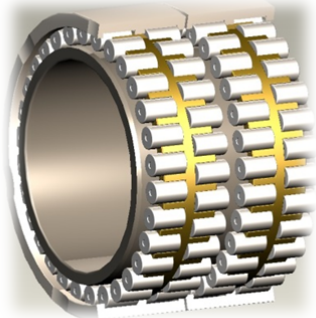
Series: 12xx
13xx
22xx

Application:

- Conveyers
- Material preparation
- Mills



SPECIAL BEARINGS

<p><i>Sealed Spherical Roller Bearings</i></p> 	<p><i>Seals protect the bearings and lubricant from contaminants and increase bearing service life.</i></p>
<p><i>Special cylindrical roller bearing (with black oxide treatment)</i></p> 	<p><i>Black oxide treatment offers the following benefits:</i></p> <ul style="list-style-type: none"><i>• slight improvement of corrosion protection;</i><i>• reduced friction and wear;</i><i>• minor dimensional changes;</i><i>• good lubrication characteristics;</i><i>• reduction of chemical attack from aggressive oil additives on the bearing steel;</i><i>• reduced maintenance costs.</i>
<p><i>Four-row cylindrical roller bearings</i></p> 	<p><i>These bearings are designed for extremely high radial load capacity with case-carburized steel materials for race and rollers maximize resistance to shock, wear and debris. Optimized internal design and improved surface quality extended the service life of bearing.</i></p>

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