

PAPER MILL BEARINGS



KYK Corporation Ltd, Osaka, Japan



- Approximately **1500** bearings are used in a paper manufacturing facility.
- Approximately cost of the bearings will be around **10%** of the machine cost.
- Proper selection ,appropriate mounting practices and adequate lubrication will give more life of the bearings and reduces down time of the machine.
- In general, there are only two principal ways to increase a plant's production capacity:
 - Use higher efficiency production machinery
 - Increase running ability by replacing good quality bearings with reasonable cost.

✓ **KYK gives you Genuine Quality Paper Mill Bearings**

KYK PRODUCTS FOR PAPER INDUSTRY



- The transformation from tree to spotless paper requires a large number of operations and numerous machines through each process
- A modern paper machine can be more than 10 meters width, 20 meters height and 200 meters long. Generally they consist of a forming or wire section, a press section, a drying section, a coating section, a calendar and realer
- Bearings are key components of paper industry; especially spherical roller bearing dominates in the paper making industry.
- Deep groove ball bearings, angular contact ball bearings and tapered roller bearings are used in the accessory units of the papermaking machines (motors, gears, fans, pumps).



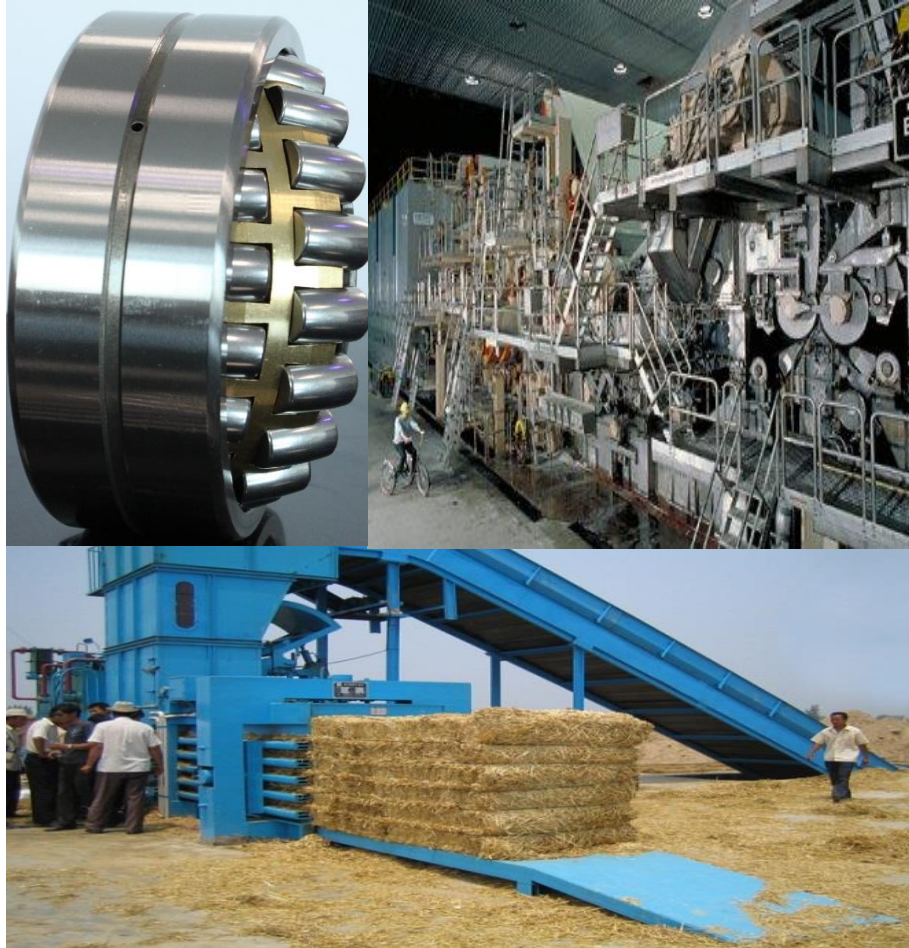
Paper making environment is harsh for bearings because of:

- Presence of water and steam
- High speed and heavy load
- High temperature
- Dusty Environment

PAPER MAKING PROCESS



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Forming: Sheet Forming Zone

- The breast box, the vital part of the machine, helps to control the uniform distribution of the pulp on the wire gauze.
- The wire gauze supports, conveys and coarsely drains the fibers that are further de-watered by the suction boxes.

1. BREAST ROLL

22300 - Series
23200 - Series
- C3 clearance
- Tapered bore

2. DANDY ROLL

22300 - Series
- C3 clearance
- Tapered bore



3. COUCH ROLL

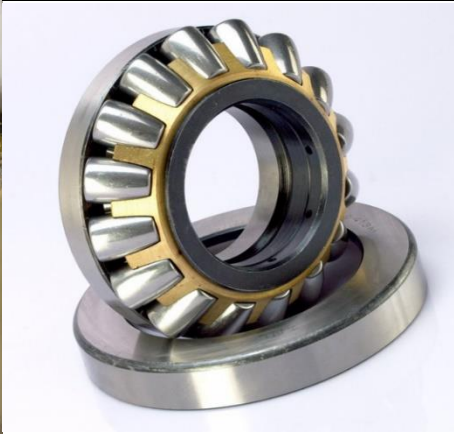
23000 - Series
23100 - Series
23200 - Series
23900 - Series
- C3 & C4 clearance
- Both Cylindrical and Tapered bore



4. FELT CARRYING ROLL

22200 - Series
22300 - Series
23200 - Series
- C3 clearance & - Tapered bore

PAPER MAKING PROCESS



PRESSING

- Press rolls, the major de-watering process, is where large rolls under high compression remove as much water as possible from the wet fiber. They serve a dual purpose: increase the dryness of the sheet and improve the density and the strength of the same sheet..

1. SUCTION ROLL

23000 - Series
23100 - Series
- C3 clearance
- Both Cylindrical and Tapered bore

2. PRESS ROLL

23100 – Series
23200 – Series
- C3 clearance
- Tapered bore

3. WET FELT CARRYING ROLLS

22200 - Series
22300 - Series
23200 – Series
- C3 clearance
- Tapered bore

4. LOWER OR UPPER PRESS ROLL

22300 - Series
23100 – Series
- C3 clearance
- Tapered bore

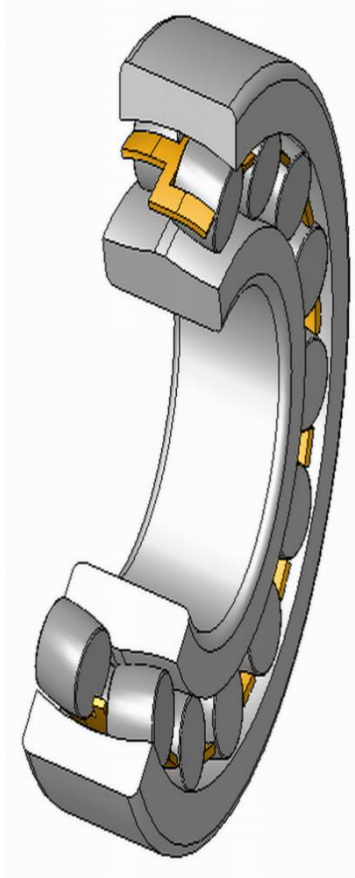
5. FRICTION PRESS

22300 - Series	34100 – Series
23100 – Series	29000 – Series
- C3 clearance	23200 – Series
- Both Cylindrical and Tapered bore	

PAPER MAKING PROCESS



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DRYING

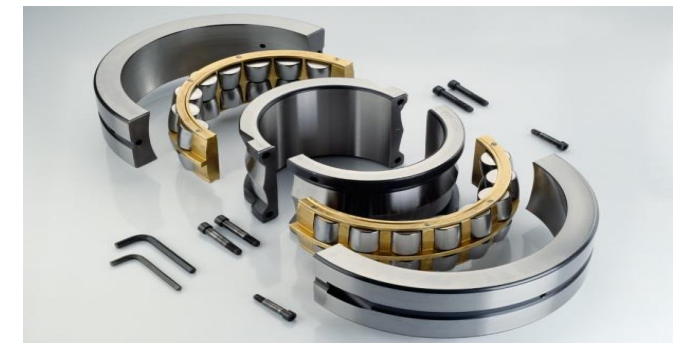
- The dryer section removes the remaining the water.

1. FELT CARRYING ROLLS

22200 - Series
22300 - Series
23200 - Series
- C3 clearance
- Tapered bore

2. DRYER ROLLS

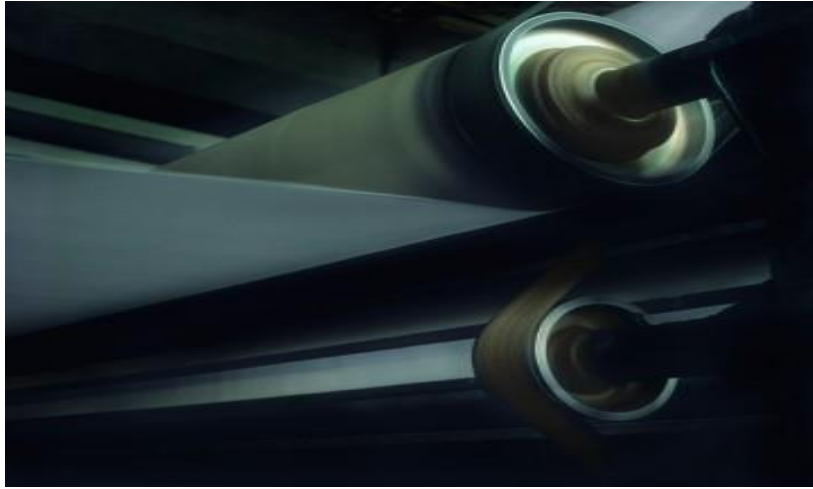
23000 – Series
23100 - Series
- C4 clearance
- Both Cylindrical and Tapered bore



PAPER MAKING PROCESS



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CALENDERING

- Calenders smooth the paper and give it its final surface finish.
- The reel winder then coils the continuous strip of paper produced by the machine onto a mandrel.

1. NON HEATED DRIVE ROLLS

23000 - Series
23100 - Series
23200 - Series
- C3 & C4 clearance
- Tapered bore

2. NON HEATED LOWER ROLLS

23200 - Series
24100 - Series
- C3 & C4 clearance
- Tapered bore



3. HEATED DRIVE ROLLS

23000 - Series
23100 - Series
23200 - Series
24100 - Series
- C4 clearance
- Both Cylindrical and Tapered bore

4. HEATED LOWER ROLLS

23200 - Series
24100 - Series
- C4 clearance
- Tapered bore

PAPER MAKING PROCESS



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RELEERING

- A wind-up turret transforms the continuous strip from the reel winder into rolls, eliminating any defects in the processing.

1. REEL WINDER CYLINDERS & DRUMS

23200 - Series

24100 - Series

- C3 clearance

- Tapered bore



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OTHER KYK BEARINGS FOR PAPER MILLS



DEEP GROOVE BALL BEARING

- 68- Series – used in rope sheaves
 - C3 clearance
- 69- Series – used in spreader rolls
 - C3 clearance
- 62- Series
- 160- Series
 - used in motors, gears, agitators/mixer & fans

ANGULAR CONTACT BEARING

- 72- Series
- 73- Series
 - used in pressurized screen, pulpers, pumps, gears, winders & reelers.

CYLINDRICAL ROLLER BEARING

- NU30/NU10- Series – used in refiners
- NU23- Series – used in felt rolls, guide rolls.
- NU/N30- Series – used in dryer rolls & M.G.cylinder
 - C5 clearance
- NU/N31- Series – C5
- NNU49- Series
 - used in corrugator rolls, gears, pulpers

TAPPER ROLLER BEARING

- Used in pressurized screen pulpers, intermediate gears, pumps & gears

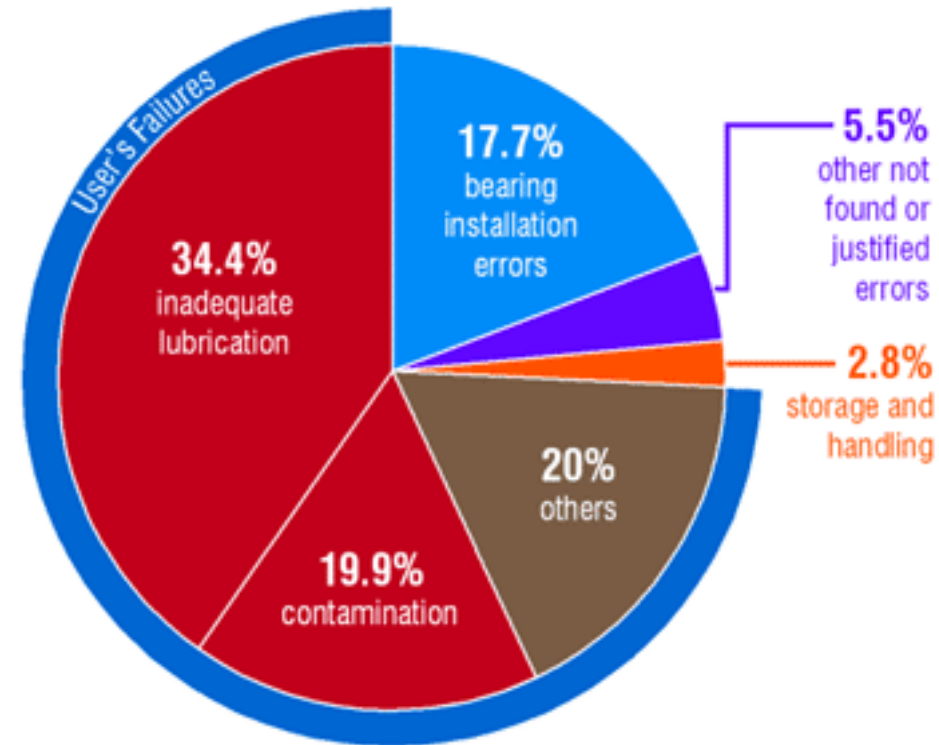
KYK also produces Pillow blocks, Plummer blocks, adapter sleeve and withdrawal sleeve for Paper mills.

TO GET MORE LIFE OUT OF BEARINGS



To get maximum life out the bearings the important are

- Selection of bearing and quality
- Lubrication practices
- Mounting practices





- Bearing failures occur for variety of reasons. one of the critical reason for bearing failure is improper mounting.
- Over 17.7% bearing failure occur due to improper mounting.

Precautions should be taken at the time of mounting the bearings

- Makes sure housing and shaft are clean.
- Adequate and proper lubrication is provided
- Necessary tools and equipment are on hand.
- Use proper sleeves for tapered bore bearings (K type)
- Using best practices for mounting a bearing can avoid improper mounting.
- Small and medium size bearings, mechanical or heat mounting used.
- For large size bearing hydraulic technique to be used.
- After mounting the bearing internal clearance to be checked

BEARING LUBRICATION



- **Modern paper machines are often very large and The operating conditions which demands high quality lubrications.**
- Different type of lubrication is used in different stages of a paper producing process according to the temperatures attained during the process.
- Normally the Forming section uses grease lubrication a high-quality grease with synthetic thickeners and outstanding water-repelling properties.
- And all other section uses Oil lubrication used as per the temperature requirements with high degree wear resistant and water replant properties.
- **The selection and filling quantity of lubricating grease or oil is determined by the demand for smooth running as well as a service life.**
- **A common maximum operating temperature for the medium temperature grease in the forming and press section is 75 °C and for high temperature grease in the dryer section 120 °C.**

WHY CHOOSE KYK BEARINGS



KYK Bearings has specialty in the manufacturing of high quality bearings to paper industry and has been successful.

Some features of KYK Spherical Roller bearings:

- 1.** They undergo special Bainite Heat treatments leading to Bainitic microstructure of the ring and rollers; this adds strength and lifetime to the bearing.
- 2.** Special and highly controlled Grinding process
- 3.** High precision Cages of top quality material
- 4.** Forged rollers of Grade 2

ABOUT US



KYK Corporation Ltd. (Formerly: Yamakai Bearing Ltd) is one of the oldest Japanese Manufacturers of ball and roller bearings, established in 1952, in Osaka, Japan.

Our bearings are supplied to more than **50 countries worldwide** and approved in a wide variety of engineering industries.

KYK Bearings cater to the growing premium quality requirement of the market. Strict adherence to **Japanese Precision and Quality Standards** make KYK the preferred choice of product.

GULF WORLDWIDE BEARINGS FZE

Official Distribution Partner for KYK Bearings



Precision Japanese Technology, Since 1953

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