



ISOTROPIC FINISHING

! IMPROVED LIFE, UP TO 20% LONGER !

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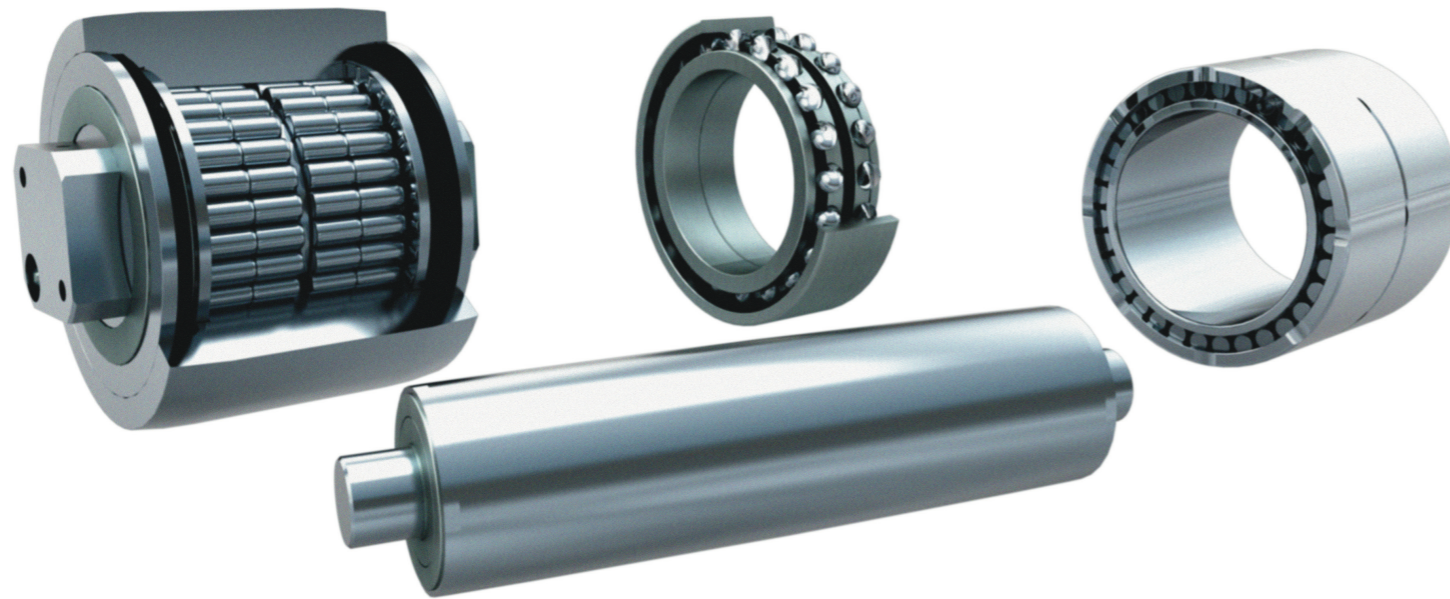


Founded in 1984, **LI-BE** produces special bearings, by dimension and execution, for different industrial applications.

The range of production includes bearings, rollers and complementary articles used in the sector of internal goods handling, metallurgical machinery, painting machinery, power transmission units, rotating tables for tool machines, etc.

LI-BE has always been synonymous with special bearings and is the holder of some international patents. For this reason the company uses a team of experts who are capable of providing solutions and projects which are suited to customers' specific requirements. Thanks to **FEA** and to the use of internal software we can have a more clear idea of the consequences of the loads on the bearings. A knowledge that, until a few years ago, was belonging to the most renowned manufacturers only.

Notwithstanding its hard-won position as market leader and aware of the rugged competition existing in its industry, **LI-BE** has never taken its attention off the niche market which are open to those companies that take flexibility, readiness, experience and reliability their strong points, as Libe does. Our know-how, the high quality of our products and the will to stand out in a more and more demanding industrial environment, make **LI-BE** the right partner for those who aim at high technological solutions.



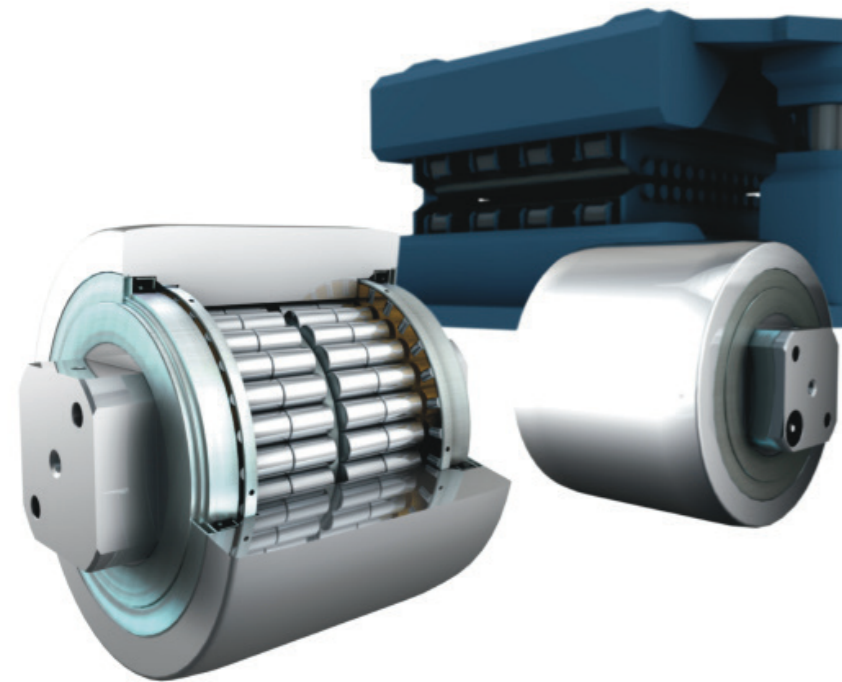
To get the best performance from your back-up roll, you need to understand everything about it.

Bearings are key components in the steel industry.

They are the reason behind some expensive plant problems:

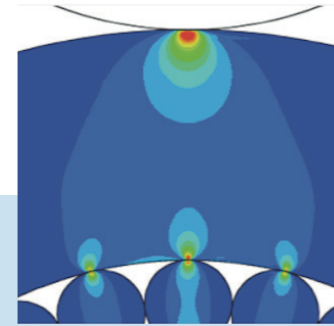
- **high maintenance costs**
- **energetic inefficiencies**
- **unexpected and premature wear**

LI-BE. BACK-UP ROLL.



Why a LI-BE Back-Up Roll?

We develop a specific design and manufacturing workflow, a perfect mix between engineering analysis and a 35 years of experience in the field.



LI-BE developed a specific process for the backup roll, based on design and manufacturing key points. We can find the most cost effective solution for you, increasing bearing life up to 20% above standard values.

DESIGN

- Elastic outer ring simulation
- Contact pressure locally verified

PRODUCTION

- Isotropic finishing process

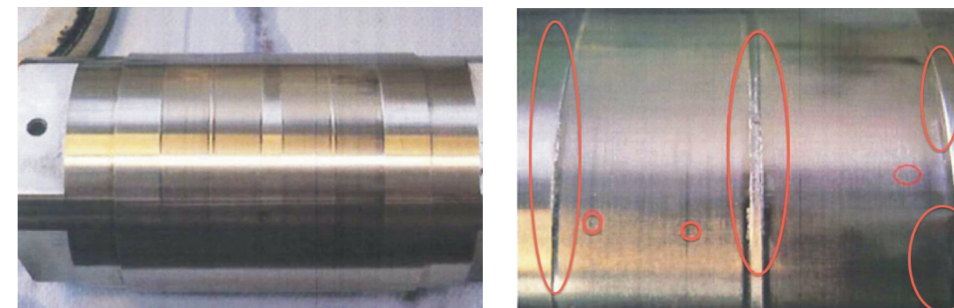
The elastic outer ring is deformed by loads.
 Less rollers are loaded and this decrease the LOAD CAPACITY.
 It's usually called "TRACK ROLLER" effect.

ISO/DIN Standards can't directly be used for these bearings.
 Outer ring deformation must be calculated to get the exact force loading each roller.
 This can prevent major issues in the size dimensioning.

Example: MR3552
 C (Fixed outer ring - BEARING) = 1404.1 kN
 Cw (Elastic outer ring- TRACK ROLLER) = 1093.8 kN
! EFFECTIVE capacity is 300kN LESS !

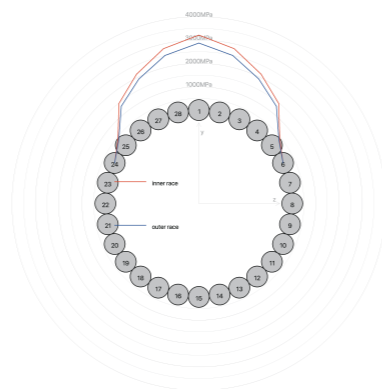
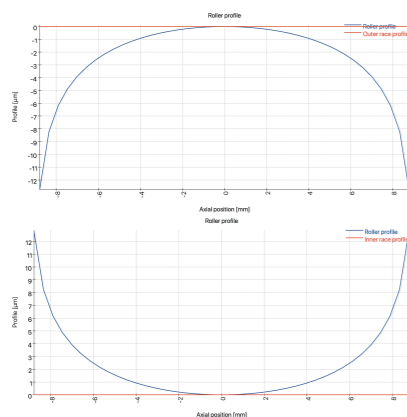
Rollers contacts on the raceway generate local wear peaks.

Thanks to our dedicated software (based on ISO/TS 16281) and to the Finite Element Analysis, we can identify and solve this problem.



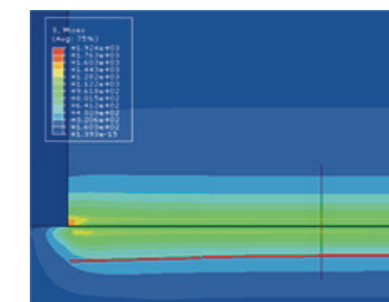
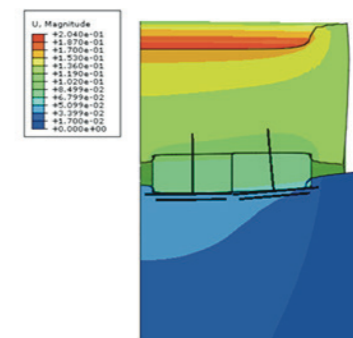
ELASTIC OUTER RING

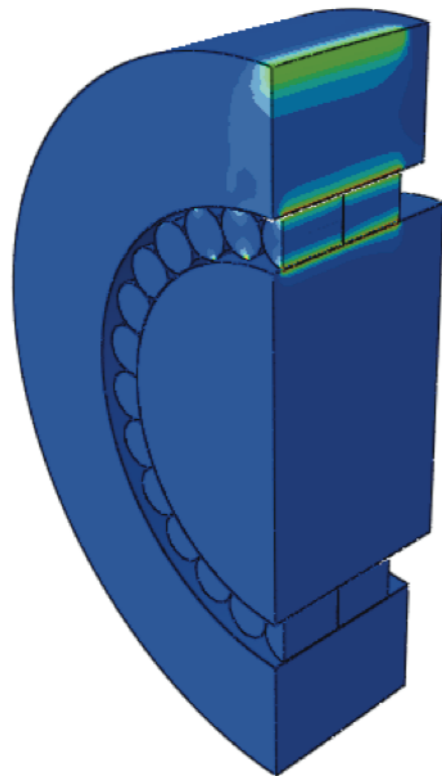
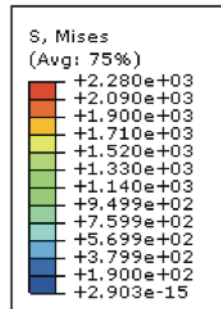
LOCAL CONTACT PRESSURE



The amount of stress in the peaks are huge.
 They can easily lead to failure, if not calculated.

MEAN contact stress = 2324 MPa
 MAX contact stress = 4406 MPa





This is the great results that **ISOTROPIC** finishing gives to your backup roll. Low friction reduce contact wear, and we are able to calculate its impact on the bearing life.

LOW FRICTION

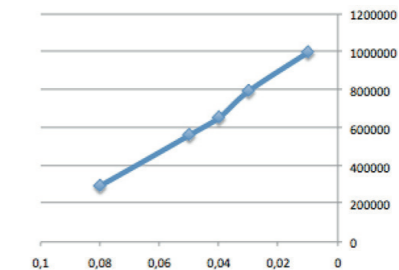
Another consequence of **ISOTROPIC** finishing, is the low level of friction. This improve the efficiency of your plant minimizing the useless loss of energy. Especially if we are talking about system without driven rollers, **ISOTROPIC** is the answer.

RESISTANCE TO CORROSION

ISOTROPIC finishing is also able to promote the resistance to corrosion of the bearing.

! IMPROVED LIFE, UP TO 20 % LONGER !

Roughness (Rq)	Life (h)
0.08	295669
0.05	564000
0.04	656000
0.03	796000
0.01	1000000





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