

A new SKF contribution to electric motor energy efficiency

Benefits

- 30–50% lower friction for reduced energy consumption
- Dimensionally fully compatible with standard bearings
- No need for design changes
- Available off-the-shelf in selected sizes
- Bearing service life double the ISO calculated life
- Smooth-running, less heat generation
- Compliance with current warranty parameters

Typical applications

- Electric motors from 2 kW to 37 kW (3 HP to 50 HP)
- Other light to medium-loaded machines with shaft diameters from 25 mm to 60 mm
- Excellent drop-in replacement for in-service electric motors

Introducing SKF Energy Efficient (E2 design) bearing arrangements

Leaders in the electric motor market have been working hard lately to cope with the increasing demand for energy efficient machines. They introduced inverter drives, worked with their suppliers on the quality of the raw materials and copper wires, and also changed their manufacturing processes. This was done because electric inefficiencies were more significant than mechanical ones.

But when dealing with energy efficiency, neither contribution is too small. For this reason, SKF decided to produce a range of energy efficient deep groove ball bearings to support the demand of many prominent customers. With 30 to 50% lower friction, compared with standard bearings, the energy savings are substantial and the bearing life is extended significantly – in most cases more than double.



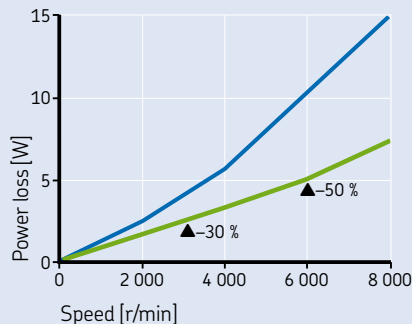
These SKF Energy Efficient deep groove ball bearings are available as shielded bearings that feature an optimized design balance between internal geometry, grease, and cage. They dimensionally comply with ISO 15:1998 in a range of selected sizes.

Initially, E2 design bearings are available to cover shaft diameters from 25 mm to 60 mm. This range is appropriate for electric motors from 2 kW to 37 kW (3 HP to 50 HP).

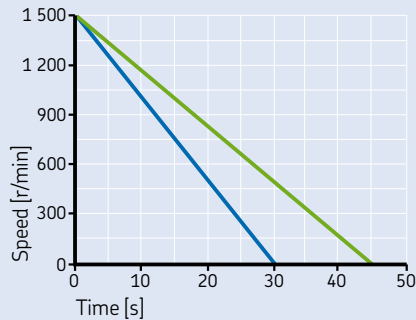




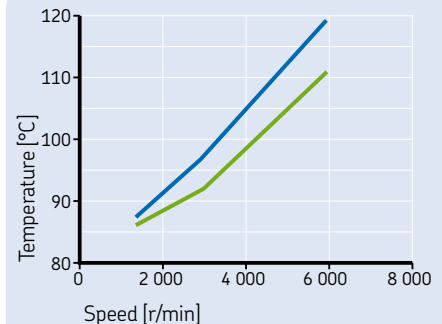
Tests show that SKF Energy Efficient bearings reduce mechanical losses and significantly prolong bearing life



- Standard SKF bearing
- SKF energy efficient bearing
- ▲ Difference in power loss



- Motor with standard SKF bearings
- Motor with SKF energy efficient bearing



- Standard SKF bearings
- SKF energy efficient bearing

Lower power consumption

Power loss simulation tests show energy savings of SKF Energy Efficient deep groove ball bearings compared to standard SKF bearings.

- Designation: E2.6306-2Z/C3 (shielded bearing)
- Radial load: 0,75 kN
- Operating temperature: 80 °C (175 °F)

Lower friction

Friction test: Running time after shut-down of the motor. The motor test under free running down mode confirmed that the energy efficient bearing generates lower friction, as the motor runs significantly longer under its inertia.

- Bearing designation: E2.6306-2Z/C3 (shielded bearing)
- Operating temperature (at shut off): 65 °C (150 °F)
- Shut down speed: 1 500 r/min

Cooler running

Calculation is at C/P=10, using default values from ISO calculations.

- Bearing designation: E2.6312-2Z/C3 (shielded bearing)
- Radial load: C/P = 10 (8,2 kN)

Energy savings

In addition to results shown in the above tests, SKF has projected typical energy savings over time as follows:

- 7,5 kW motor running at 3 000 r/min continuously = savings of 94 kWh/year
- 37 kW motor running at 3 000 r/min continuously = savings of 270 kWh/year



© SKF is a registered trademark of the SKF Group.

© SKF Group 2009

The contents of this publication are the copyright of the publisher and may not be reproduced (even extracts) unless prior written permission is granted. Every care has been taken to ensure the accuracy of the information contained in this publication but no liability can be accepted for any loss or damage whether direct, indirect or consequential arising out of the use of the information contained herein.

PUB XX/XX 06705 EN · July 2009 · Printed in Sweden on environmentally friendly paper.

