



## Prevent bearing damage and downtime caused by stray electric currents

### Benefits

- Prevents the problem of bearing damage from stray electric currents
- Extends bearing service life
- Drop-in replacement for easy installation
- Increases grease life
- Resists damage from contaminants
- High-speed capabilities
- Quiet-running

### Typical applications

- Variable speed drive motors
- Direct-drive fans
- High speed motors
- HVAC systems
- Problem motors



As the use of frequency converters for electric motors have become more popular, a common problem is elevated noise levels and premature bearing failure. But, don't be too quick to blame the bearing. The fact is that bearing damage is only the symptom. The real problem is stray electric current passing through the all-steel bearing. One common but costly maintenance response is to replace the bearing. Another is to insulate the housing or shaft – an expensive and time-consuming task. SKF® has a better solution: Bearings designed to manage electrical current.

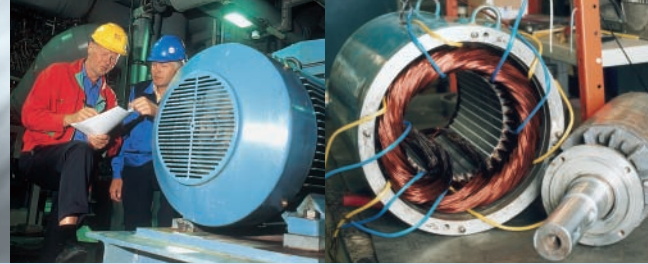
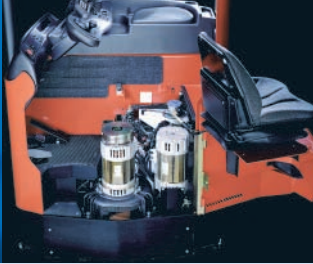
### SKF hybrid bearings

SKF hybrid bearings combine steel rings with silicon nitride rolling elements. An engineered ceramic material, silicon nitride is extremely hard, tough, and an excellent insulator against electric currents.

The insulation protection provided by hybrid bearings is relative to the size of the rolling elements. The smallest SKF hybrid bearing in the electric motor range is estimated to have a resistance of more than 10 GΩ at a minimum breakdown voltage of 2.5 kV DC.

SKF hybrid bearings can accommodate higher speeds, run better under poor lubrication conditions, and resist contamination. The result is significantly longer service life compared to all-steel bearings. And because SKF hybrid bearings have the same boundary dimensions as all-steel bearings, they are drop-in replacements that do not require special handling.





# SKF puts more ROI in your MRO.

The whole idea behind the SKF 360° Solution is to help you get more out of your plant machinery and equipment investment.

This means lowering your maintenance costs, or raising your productivity, or both! Here is an example of the SKF 360° Solution at work in electric motors.

## Hospital saves thousands of dollars by switching to hybrid bearings



Many hospitals utilize fans equipped with variable frequency converters to control air flow, while reducing energy consumption and operating costs. But, stray electric currents generat-

ed by these systems can cause a side effect that is debilitating to performance and a drain on the maintenance budget.

A hospital running 150 direct drive fans at full capacity was experiencing problems with premature bearing failure, with a mean time between failure (MTBF) of 3 to 4 years. Because hospital regulations prohibited daytime maintenance, the facility was faced with more expensive evening labor costs. It was estimated that each motor replacement cost the hospital more than \$480 in service hours.

A call to the local SKF distributor led to an inspection of the fan system by an SKF engineering team. It was determined that stray electric currents from the variable frequency converters were damaging the bearings, causing them to fail prematurely.

The problem was solved by removing the all-steel bearings and replacing them with SKF bearings that prevent bearing damage caused by stray electric currents. The choice was made to install SKF hybrid bearings.

The insulating properties of the silicon nitride rolling elements used in SKF hybrid bearings, combined with their ability to run longer under poor lubrication conditions, resulted in an excellent recovery of fan performance and costs.

Once all 150 fans are upgraded, the hospital expects annual savings to reach \$13,100.



Documented Solutions Proven

SKF 360 Solution ROI calculations are from the SKF Documented Solutions Program. Ask your SKF Authorized Distributor for more details.

## ROI summary (annual basis)

### Previous cost:

Motor bearings .....	\$1,800
Maintenance cost .....	\$18,500
<b>Total .....</b>	<b>\$20,300</b>

### New cost:

Investing in SKF hybrid bearings .....	\$2,400
Maintenance cost .....	\$4,800
<b>Total .....</b>	<b>\$7,200</b>

**Total savings .....** \$13,100

**Total ROI .....** **545%**

Note: All numbers are rounded and based on customer's estimates of labor and production costs

