



## **NKE electrically insulated rolling bearings**

- > Optimum protection against bearing damage caused by the passage of currents

*More possibilities!*

**NKE**  
B E A R I N G S

# NKE electrically insulated rolling bearings

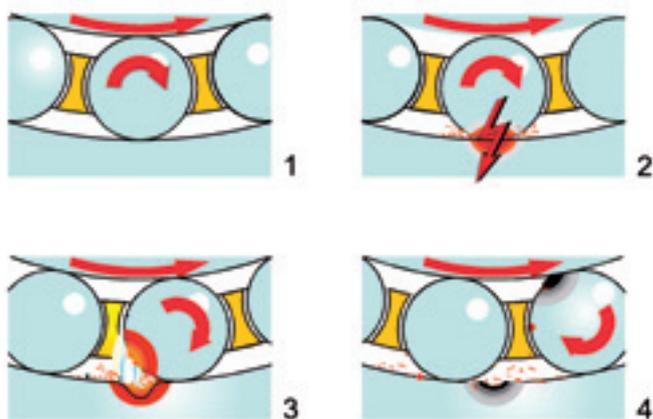
- > Simple, effective electrical isolation with bearings
- > Optimum protection against the passage of currents

## Bearing damage by the passage of electrical currents

Under adverse conditions the rolling bearings used in electrical machines can sustain damage through current discharge.

Especially in modern machines with their high power density and high customer requirements concerning service life and operating reliability, failures by electrical corrosion can cause serious problems.

### How electrical corrosion works



1. In the rotating bearing a potential difference occurs between the shaft (inner ring) and housing (outer ring).
2. When this voltage reaches a certain level, the lubricant film between the bearing's metallic parts is breached and roughness peaks of the rolling element and the raceway can be fused together momentarily.
3. During the subsequent rolling motion the fused areas are separated again and an electric arc forms between the rolling element and the raceway causing further fusion penetration. These arc craters are areas with a significantly altered microstructure. These processes destroy the surface quality.
4. As the bearing continues to operate, material particles are released from these damaged areas and get into the rolling contact zone. There they cause local overloading of the bearing material, resulting in rapidly accelerated material fatigue.

## The solution: Electrically insulated rolling bearings from NKE

NKE electrically insulated rolling bearings reliably prevent current discharge. Three versions are available:

- > **Bearings with oxide ceramic insulating layers** – Applied with plasma technology, the insulation has a guaranteed dielectric strength of at least 1000 V AC or DC.  
**SQ77:** Insulation on the outer ring  
**SQ77E:** Insulation on the inner ring

- > **SQ77B (hybrid bearing):** Rolling bearing with oxide ceramic rolling elements. Resistance of insulation theoretically  $\infty$ . (see illustration)

NKE hybrid bearings with ceramic rolling elements



## Advantages

- > Higher operational reliability through optimum protection against electrical corrosion
- > More economic than, for example, insulation on housings or shafts
- > Interchangeable: Same key dimensions and technical properties as conventional bearings
- > Coating resistant to damage if correctly handled

## Typical applications

- > Electric motors, generators, etc.

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