

Maintenance and Service Strategies for aging wind farms

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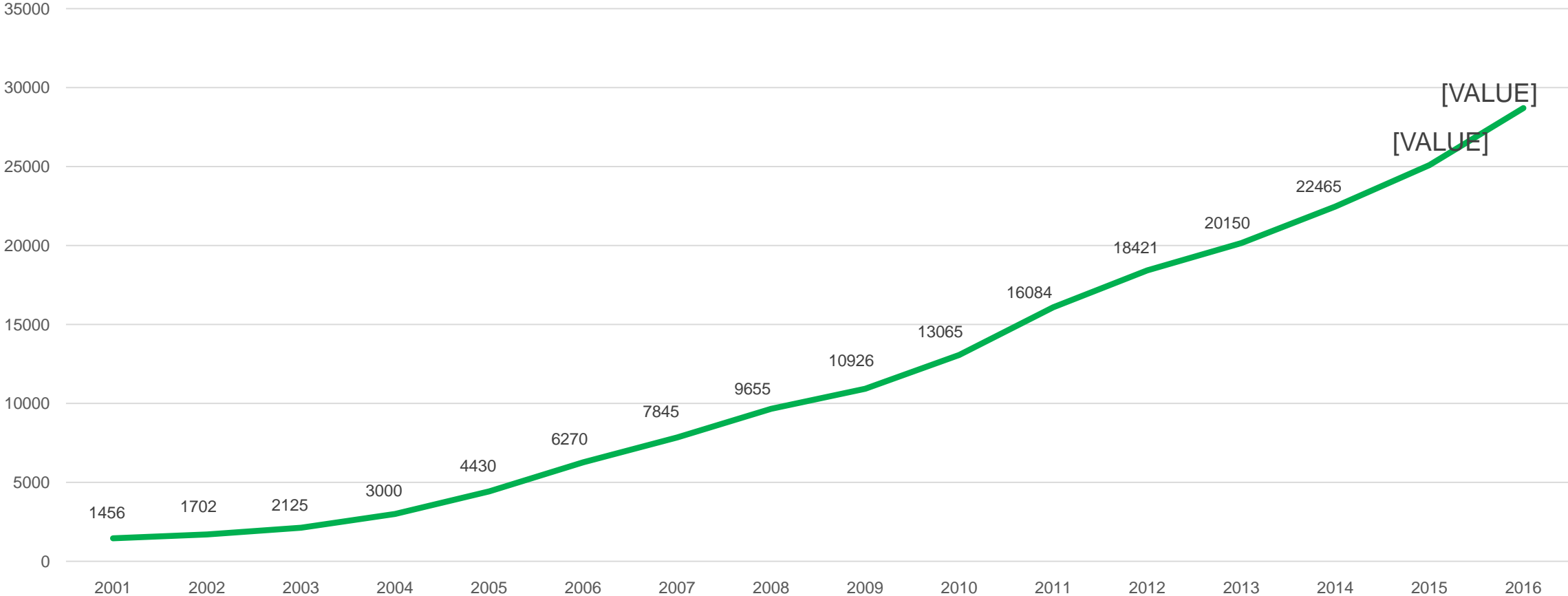
SKF®

Agenda

1. Turbines are getting older
2. What can SKF do for your Wind farm?
3. SKF Solution Offerings for Wind Farms

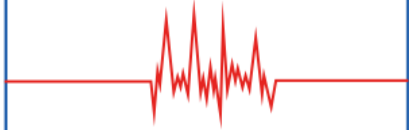
India

Total Installed Capacity of Wind Turbines in India



What can SKF do for your Wind Farm?

DETECT



Detect potential failures

- Condition monitoring products and services

SOLVE



Eliminate underlying problems

Reliability engineering / RCA

Multi-platform solutions

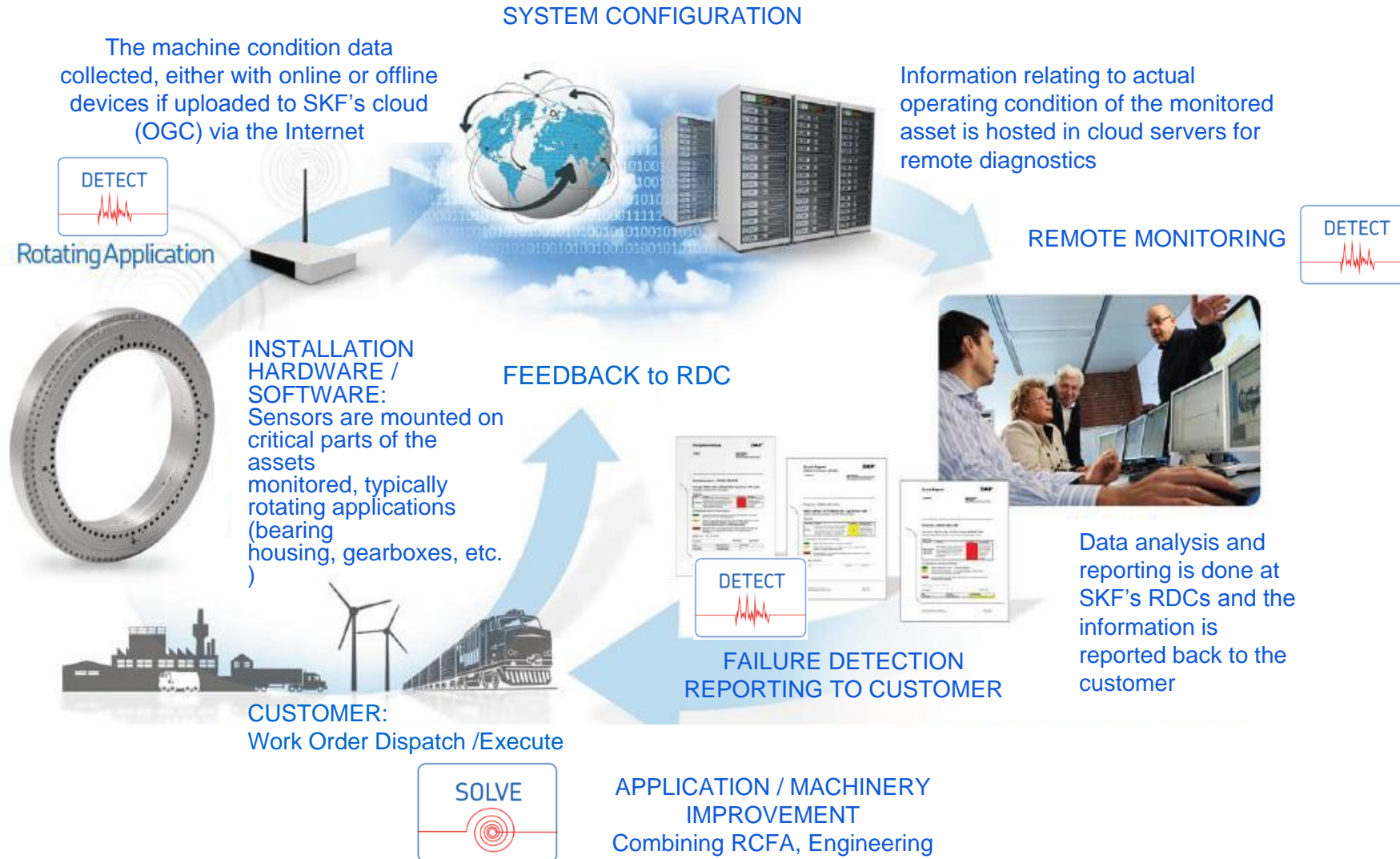
RE (BUILD)



Build & rebuild equipment that has already been damaged

Remanufacturing

Detect- Condition Monitoring Services



Potential wind failures in wind gearbox

cracks and/or spalls

fretting & ring creep

flange fracture

micropitting

adhesive wear (smearing)

thermal damage

cracks and/or spalls

cracks and/or spalls

full complement roller smearing

20 mm

Black Oxidised bearings

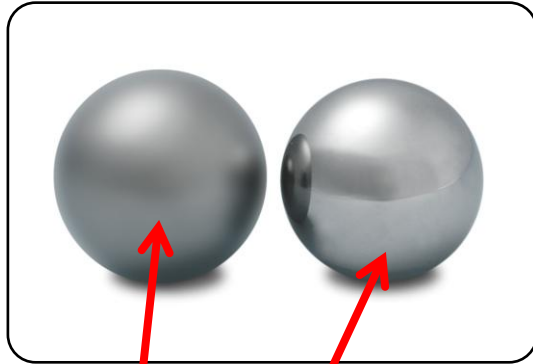


"L5B": black oxidised rollers

"L4B": black oxidised rollers and rings

- ➔ Corrosions protection
- ➔ low friction
- ➔ improved running-in
- ➔ reduced risk for smearing damage

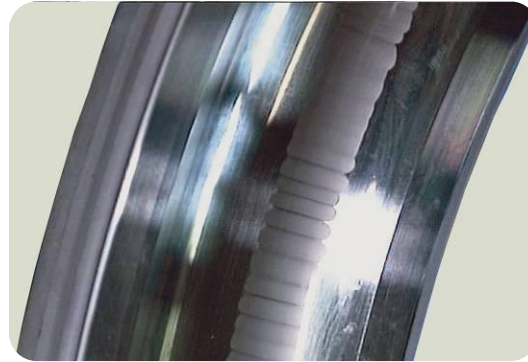
Electrical erosion process - current leakage



A dull grey surface of the rolling elements can be a sign of microcratering.

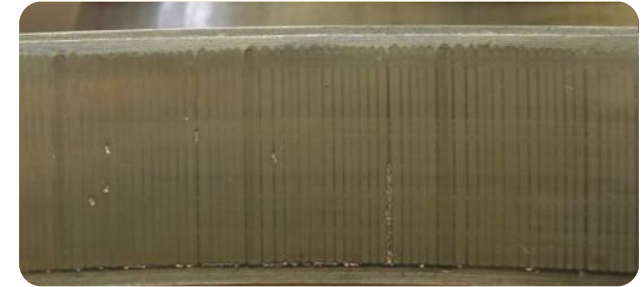
Left: ball with dull gray surface

Right: new ball with mirrored picture of the ball to the left



Fluting or washboarding in a raceway caused by the passage of damaging electrical current.

Outer ring raceway of a deep groove ball bearing



Fluting or washboarding in a raceway (Cylindrical roller bearing) caused by the passage of damaging electrical current.

SKF INSOCOAT® bearings

The Offer:

- **VL0241** – electrical insulation layer on the outer ring
- **VL2071** – electrical insulation layer on the inner ring



VL0241



VL2071

Hybrid Bearing



- Safe Electrical Insulation
- Higher Speed Capability
- Extended Grease Life
- Extended Wear Resistance

Re-manufacturing

Bearing before remanufacturing



Bearing after remanufacturing



- Cleaning and inspection
- Defect and root cause analysis
- Polishing – rollers / raceways
- Raceway grinding, if needed
- Cleaning and rework of the cage, if needed
- New rollers, if needed
- Preservation
- Repackaging
- Return

