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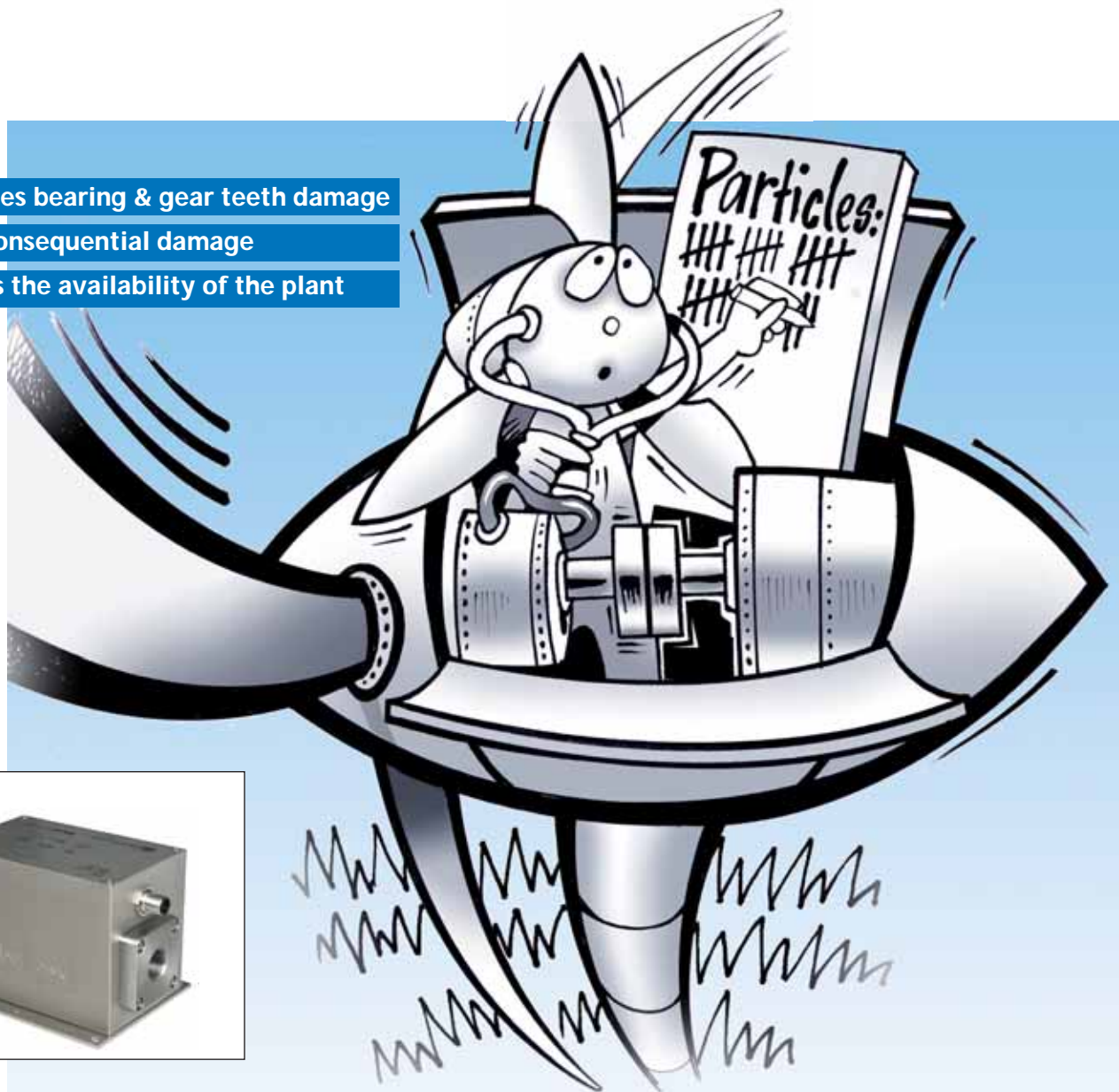
WEARSCANNER®

Online particle distribution counter
monitors wear debris in oil

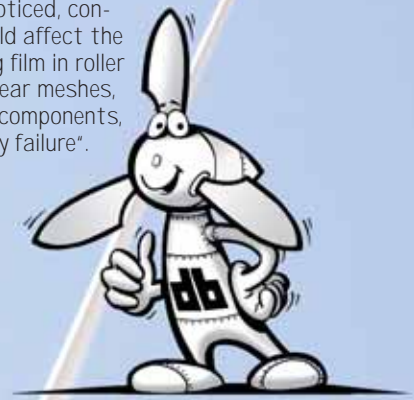
Recognizes bearing & gear teeth damage

Avoids consequential damage

Enhances the availability of the plant



"If passed unnoticed, contaminants could affect the thin lubricating film in roller bearings and gear meshes, damage other components, and cause early failure".



Early recognition of bearing and gearbox damage

Several hundred liters of oil are circulating within a wind turbine plant, particularly for lubricating, cleaning and cooling the heavy-duty gearboxes. The thin lubricating film in roller bearings and gear meshes is highly sensitive to contaminants that, if passed unnoticed, could damage other components and cause early failure.

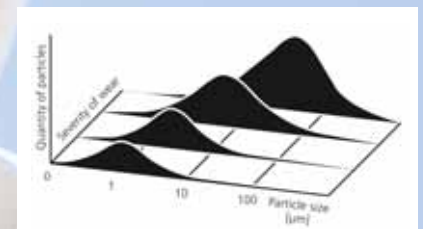


WEARSCANNER® is an intelligent sensor that detects electrically conductive particles invisible to the eye:

it counts them in realtime and classifies them according to their size. When mounted into the oil circuit upstream of the bypass oil filter, this non-intrusive sensor transfers its measuring data to the plant control system via ModBus and/or online via CMS straight to the operator or service center. Changes in the quantity and size of the detected particles observed during trend monitoring indicate progressive damage to gear teeth or roller bearings at a very early stage. WEARSCANNER® uses a new patented method for detecting particles which is based on the eddy current principle and works independently of oil temperature, flow rate, viscosity, air and water contents or oil color (darkening). This way, it can detect thousands of particles per second. Common inductive measuring meth-

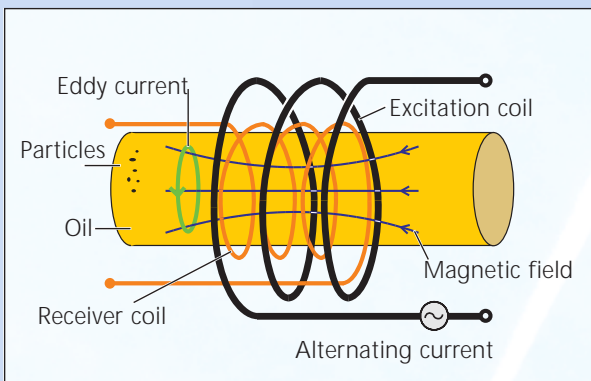
ods, by comparison, cannot detect particles smaller than 250 µm and are limited to a maximum of 100 particles per second – provided that the flow velocity is sufficiently high.

Size and distribution of particles



General rule: The larger the particles, the greater the damage.

The eddy current measuring principle



The eddy current measuring principle.

An excitation coil (black) that generates an alternating magnetic field (blue) induces eddy currents (green) in the oil. A receiver coil detects the resulting eddy current density. Electrically conductive, i.e. ferritic and non-ferritic contaminants in the oil change the current flow between the excitation and the receiver coils. In order to detect even miniscule particles at high flow velocities WEARSCANNER® utilizes the fast reacting differential coils method with two receiver windings connected in opposition.

Technical details

Fitting dimensions	1/2" - other sizes available upon request
Measuring method	eddy current, differential coil principle
Flow velocity	0.01 m/s – 5 m/s
Temperature range	-20°C – 80°C
Dimensions	120 x 80 x 80 mm
Weight	3.5 kg
Casing material	stainless steel 1.4308 (seawater-proof)
Particles	ferritic or non-ferritic
Particle size class	up to 8 size classes can be set
Signal processing	particle distribution counter with integral average determination and classification
Oil type	mineral or synthetic
Oil pressure	max. 16 bar
Further sensors	oil temperature, internal temperature
Interfaces	TCP/IP with Power over Ethernet
Protocols	Modbus TCP, FTP & Telnet
Power supply	24 V – 48 V
Display	LED 1: green = system ready, red = fault – LED 2: yellow = particles passing through, red = overload
Maintenance	no moving parts, maintenance-free
Self-monitoring	integrated
Flash protection	integrated
Ex protection	optional

Visit us at www.pruftechnik.com

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Productive maintenance technology