Application Note

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Reducing downtime in wind turbines with advanced real-time monitoring

Smart monitoring with **Acoem MV-x**

- Minimises unscheduled downtime.
- Reduces equipment failure.
- Provides real-time insights into turbine behavior.
- Enhances energy production efficiency.
- Streamlines maintenance planning.

Key turbine components monitored

Gearboxes

Generators

Main bearings

Blades

Towers

Why choose Acoem's wind turbine solution?

- Reduce costs and improve reliability.
- Detect faults early, saving over $100,000 per detected issue.
- Extend turbine life by 5–10 years and avoid costly downtime.
- Schedule repairs during low-wind periods, minimising impact on production and revenue.

Proven expertise in wind turbine reliability

15+
Years of wind turbine reliability

3,000+
Turbines monitored globally

1
Unified ecosystem in NEST Vision, combining vibration, alignment, oil, thermography, and more

Advanced technology backed by innovation

Acoem's wind turbine solution leverages the proprietary Acoem MCT™ (Machine Condition Tracking) methodology to identify defects early, enabling timely maintenance and preventing failures.

Shock finder™
Detects faults in low-speed components, like main bearings, up to 1 year in advance, preventing costly drivetrain failures.

Smart anomaly detection AI
AI identifies and prioritises critical issues, boosting efficiency with minimal operator input.

Acoem MCT™
Adjusts monitoring every 80 milliseconds based on the turbine's operating conditions, including wind speed, power, pitch, yaw, and more, ensuring real-time performance optimisation.

MV-x edge computing
Instantaneous processing with microsecond precision.

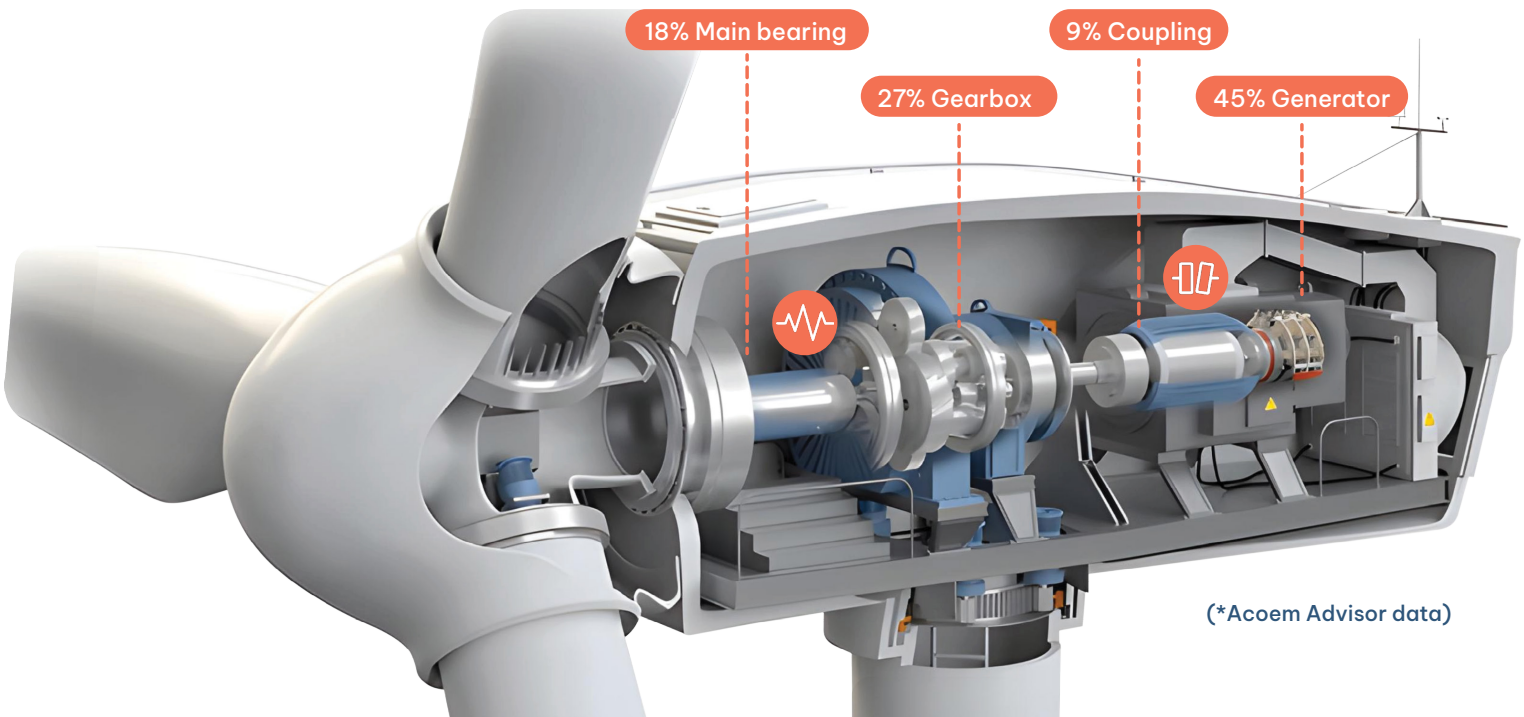
Stay ahead of failures with Acoem's early detection solutions

Main bearing 1 year

Gearbox 9 months

Generator 6 months

Common failure rates in wind turbines*



(*Acoem Advisor data)

Predictive maintenance with Acoem Advisor

Enroll your monitored equipment in Acoem Advisor, our world-class predictive maintenance program.

Remote monitoring
Acoem experts track equipment health and provide timely updates.

Comprehensive health reports
Receive periodic reports with preventive action recommendations.

Proactive notifications
Stay informed about significant events requiring attention.

Key features

- Real-time vibration monitoring.
- Machine Condition Tracking (MCT™).
- Compatible with various turbine types and sizes.
- Integration with existing infrastructure (PLC, SCADA, PI, etc.).
- Flexible deployment options (local or remote).
- Remote analysis and reporting.
- On-demand customer support and training.

Key benefits

- Early detection of defects.
- Improved maintenance planning and efficiency.
- Reduced downtime and equipment failure.
- Increased machine uptime and availability.
- Lower maintenance costs.
- Enhanced safety and productivity.

Read the success story

A wind turbine case study:
From critical failure to major savings

Typical installation of wind turbine monitoring

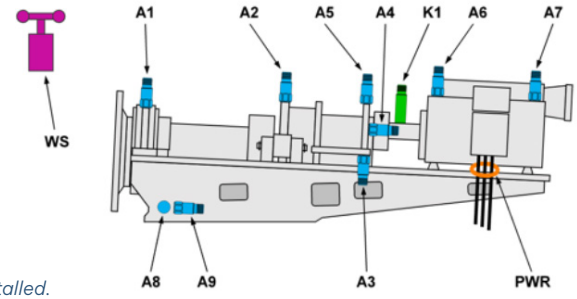
Sensor placement

- Main Bearing: 1 sensor
- Gearbox: 4 sensors
- Generator: 2 sensors
- Tower/Nacelle: 2 sensors

Process information monitored (from PLC)

- Speed
- Power
- Wind speed
- Blade pitch angle

Note: If process information is unavailable from the PLC, additional sensors will be installed.



Bill of materials

Acquisition and sensors

Reference	Description	Qty
MVX3017000	MV-120 EXPERT - Online Monitoring System	1
MV-120/xx	MV-120 CABINET	1
CAC3201000	Accelerometer ASH426-WB, 100mV/g, 80 g	7
CAB3108000	Cordset M12 - 10m cable	7
860074	2 components glue	1
ACA3126000	SET of 10 Cementing stud M6	1
ACA1016000	Captive screw M6 for ASH426-WB	7

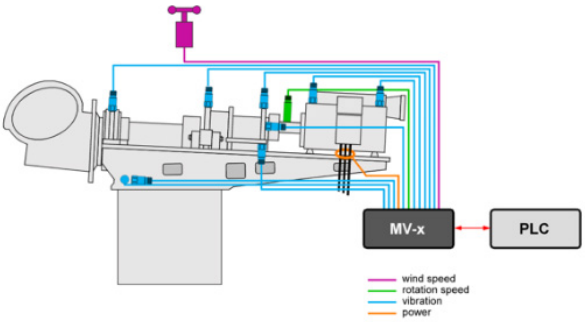
Process sensors

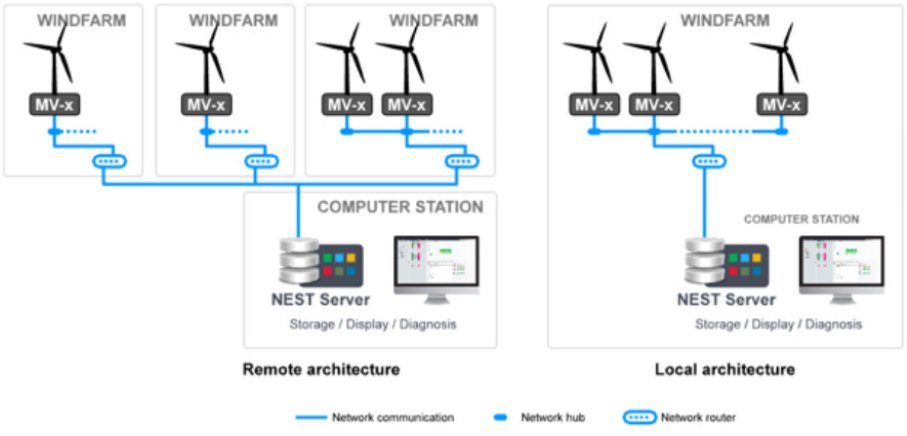
Reference	Description	Qty
CAC1007000	Tachometer	1
CAB3108000	Cordset M12 - 10m IP67 Shielded cable	1
MVX1028000	Current transducer 2000 A	3
	Wind speed	1
860235	Nacelle/Tower Vibration sensors 799LF	2
860327	Cordset 2pinMS - 10m cable	2

Communication options:

Compatible with Acoem NESTi4.0 software, available on cloud or on-premises.

- 5G
- WiFi
- Optical fiber
- RJ45 cables





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CREATING ENVIRONMENTS OF POSSIBILITY