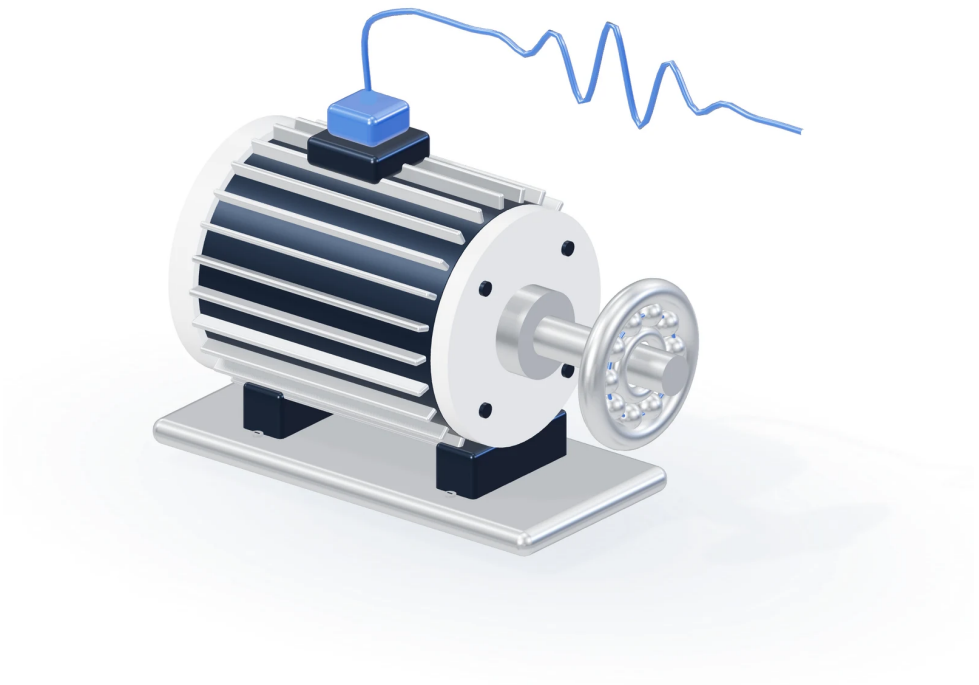
A guide to equipment health

Catch problems early. Act before failure.

FactoryOS Predictive Maintenance uses AI to help spot warning signs before equipment fails. Investigate changes, review the evidence, and decide what to inspect across your operation.



Start with sensors. Or plant data.

Wireless sensors

Monitor with vibration, ultrasound, and temperature sensors. No PLC, SCADA, or historian connection required.

Existing plant data

Use measurements from the systems you already run, including pressure, flow, current, and temperature.

Both, together

Bring sensor readings and operating data into the same investigation when you need more context.

One module of FactoryOS, the AI operating system for factories.

Equipment coverage

Across your operation.

Choose measurements that suit each asset. Monitor with sensors, existing data, or both, and compare changes with how that equipment normally runs.

Equipment	Useful measurements	What to investigate
Rotating equipment Motors, pumps, fans, compressors, and gearboxes.	Vibration and ultrasound; speed, load, and temperature when available.	Bearing wear, imbalance, misalignment, gear wear, and cavitation.
Fluid & process systems Valves, filters, heat exchangers, and pumping systems.	Pressure, flow, temperature, and valve timing.	Performance drift, filter loading, fouling, and leaks.
Electrical assets Panels, transformers, and electrically driven equipment.	Current, power factor, phase balance, and temperature.	Electrical changes and unusual heating in the context of load.

Custom equipment & systems

Build monitoring around your own assets. Select the signals, establish normal behavior, and investigate changes in performance, efficiency, or cycle time.

From a change to your next check.

01 **Establish normal**
Use a known healthy operating window as the baseline.

02 **Check operating conditions**
Look for repeated changes under comparable operating conditions.

03 **Investigate with AI**
Ask what changed and explore the supporting measurements.

04 **Plan the next inspection**
Consider possible causes and choose what to inspect.

Monitoring reference

29 checks for machine health.

These checks support rotating-equipment monitoring. Some require waveform data, component details, or an accepted healthy baseline.

01 Overall condition

Overall levels and changes over time

- Overall vibration severity (ISO zone)
- Vendor condition grade
- Overall vibration trend
- Overall acceleration deviation
- Unexplained non-synchronous peak

02 Rotor and shaft

Speed-related patterns and directional vibration

- Rotor unbalance
- Angular misalignment
- Parallel or offset misalignment
- Rotating looseness
- Structural looseness or soft foot

03 Bearings and lubrication

Bearing frequencies, impacts, and ultrasound

- Bearing defect frequency
- Early bearing wear
- Late-stage bearing failure
- Impacting
- Lubrication degradation
- Ultrasound above configured limit
- Lubrication interval by running hours

04 Drivetrain and process

Component frequencies and vibration patterns

- Gear mesh wear
- Gear tooth defect
- Belt defect
- Blade or vane pass
- Pump cavitation

05 Electrical and thermal

Electrical patterns and temperature changes

- Twice line frequency
- Rotor bar defect
- Temperature above limit
- Temperature rise above ambient
- Temperature trend

06 Monitoring health

Checks on the data behind each finding

- Sensor and data quality
- Operating speed change

Evidence you can review.

Severity describes the change; confidence describes the evidence for a possible cause. Missing data is not a healthy reading. Findings guide inspection. They do not confirm a diagnosis, predict an exact failure date, or change machine control.