Intelligent vibration monitoring.
efector octavis. Intelligent vibration monitoring.

Increase machine uptime, reduce maintenance costs, assure production quality.

Online diagnosis of machine condition supports a continuous Predictive Maintenance Strategy. An internal microprocessor tracks up to 24 different machine components. Monitors bearing damage, unbalance, alignment or cavitation issues.

Enables operator to schedule corrective maintenance and avoid unplanned interruptions, increasing uptime.

Seamless integration with higher level data acquisition and control systems via digital and analog outputs or standardized OPC (Open Protocol Communication) interface.

Protection from environmental hazards or secondary damage to expensive fixed assets.

efector octavis can be permanently installed to provide real-time monitoring.

On-board digital and analog alarm outputs for simple system integration.

Provides advance warning of changes to equipment's condition.

Multiple programmable alarm levels (green/yellow/red) offer sophisticated coordination of planned reaction.

Integrated alarming provides automated shutdown before catastrophic failure can occur.

Additional damage to other machinery or dangerous conditions to the facility can be avoided.

Analysis tools to identify causes, document findings, create reports and optimize equipment usage.

efector octavis offers multiple tools to identify and document equipment damage and possible causes.

An internal memory records and time stamps monitored equipment components vibration levels.

Detects trends and the progression of wear.

Stored history files graphically identify trends and events such as crashes, overheating, running speed etc.
efector octavis: Cost effective real-time vibration monitoring.

Multiple form factors: compact field unit (VE/VK) cabinet mount module (VSE).

Easy to use configuration and analysis software.

Direct Ethernet connectivity for remote monitoring (VSE).

Standardized OPC interface for high level integration (VSE).

Digital and analog alarm outputs.

Time stamped internal memory for trend history (VE/VSE).

efector octavis is an easy to implement vibration monitoring system that collects vibration data and automatically conducts signal analysis for machine diagnosis. The machine condition is determined for transmission to controllers or SCADA systems. The main requirements for modern machine monitoring are fulfilled: Compatibility, modularity and transferability.

Compatibility with high level control systems is ensured using the standardized OPC compatible server software. The efector octavis modularity allows limitless network expansion. Programming of the monitor is straightforward using the “wizard” guided configuration software. Programmed parameter sets can be both uploaded from the monitor or downloaded from a PC for safe storage and transferability.

Comparison of system costs per measurement point.

All units belonging to the octavis family (VE/VSE) have an internal trend history. This allows a detailed analysis and equipment usage can be optimized without external data recording. The storage intervals are freely selectable. This means that the storage length of the nonvolatile ring-memory is adjusted to the requirements.
Leading in integrated vibration diagnosis.

**Assure quality:**
**Machine tools.**

*Target:* To safeguard the availability and quality of a linked production process. Reduce the costs for spare parts.

*Vibration sensors:* Each VSA accelerometer on the spindle housing delivers the vibration data for integrated condition monitoring. The difference is made between permanent monitoring and the operating condition. To determine the root cause analysis the event “crash” is also logged in the internal memory. The spindle speed supplied for vibration monitoring can also be used for checking unbalance.

*Benefits:* Damage caused by load can be avoided using the display and or switching outputs as well as root cause analysis and bearing condition monitoring.

*Additional ifm sensors:* Pressure, flow, temperature, and level sensors for coolant monitoring.

**Increase uptime:**
**Process equipment.**

*Target:* To assure product quality and prevent material waste.

*Vibration sensors:* Two VSA accelerometers connected to the diagnostic electronic type VSE to monitor the rolling function on both sides of the wiper rollers.

*Benefits:* Irregularities are detected in the rolling behaviour at an early stage.

*Additional ifm sensors:* Inductive sensors for position detection.

**Prevent waste:**
**Steel processing.**

*Target:* To assure system availability.

*Vibration sensors:* VSA accelerometers for connection to diagnostic electronic type VSE monitor critical components (pumps, motors, mixers). A number of different diagnosis characteristics are monitored online and the information is forwarded via the Ethernet interface to the maintenance planning system.

*Benefits:* The guaranteed plant availability is ensured. Documentation of damage events and their cause. Evaluation of trend data for weak point analysis and plant optimisation.

*Additional ifm sensors:* Examples are: Pressure sensors, compressed air meter, temperature and position sensors.

**Monitoring of reducing mill in cold rolling steel mills.**
Proven industrial performance.

Online centralized monitoring:
Wind and water.

Target: Early detection of critical failures. Coordination and scheduling of maintenance and repairs.

Vibration sensors: Up to 8 VSA accelerometers monitor the mechanical condition of main rotor, gears and generator. The online diagnosis automatically allows for the current speed and performance. Both process factors are connected to the diagnostic electronic type VSE and are set off against the vibration characteristics. To monitor tower vibration it is possible to use 2 VSA accelerometers and 1 diagnostic electronic type VSE. If machine protection is foremost, it is possible to start with 4 VSA accelerometers and 1 diagnostic electronic type VSE.

Benefits: A complete remote vibration monitoring system that monitors the entire mechanical drive system of today’s high power wind turbines for early detection of potential damage and the identification of failing components.

Additional ifm sensors: Inductive sensors and control monitors for speed monitoring.

Permanent condition monitoring in water treatment plants.

Target: Early recognition of damage to critical components in separate, unmanned pump stations.

Vibration sensors: Important pumps, blowers, fans and centrifuges are monitored for bearing damage, unbalance and overall vibration level. For these applications the cabinet module type VSE with sensor type VSA as well as the compact version type VE are suitable. The measuring data are collected and forwarded to a central control station e.g. via Ethernet or bus system.

Benefits: Continual monitoring of critical plant components. Protecting the environment.

Additional ifm sensors: Flow and pressure sensors.

Oil flow monitoring.

Coolant towers and exhaust fans.

Condition monitoring of screw type compressors.

General equipment monitoring.

Wind turbine condition monitoring.
Intelligent sensors for condition monitoring.

**Main and planning level**

Enterprise Ressource Planning System (e.g. SAP PM)

**Optional data acquisition**

OPC server interface software E30114

**CMS condition monitoring systems**

Online diagnosis

For further information or other intelligent sensors for condition monitoring please refer to our catalogue fluid sensors and diagnostic systems or visit our website [www.ifm.com](http://www.ifm.com)
The complete range.

Online vibration monitoring: the right product for the application. VK and VE units can monitor overall machine vibrations, e.g. according to the new EU machinery directive. The product series VSE provides all options for an integrated complete machine diagnosis – from an automated frequency-selective diagnostic measurement to an integrated trend with time stamp.

### Vibration diagnostic units

<table>
<thead>
<tr>
<th>Type VE10xx – vibration monitoring of up to 5 diagnosis values and 2 g-monitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated history memory; optional speed input; integrated LED diagnosis; RS232 interface; IP 67; 2 switching outputs; measuring range +/- 25 g; frequency resolution adjustable 1.25 or 0.125 Hz; speed range 12...12,000 rpm</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Type VE11xx – vibration monitoring of up to 5 diagnosis values and 2 g-monitors</th>
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</thead>
<tbody>
<tr>
<td>Integrated history memory; optional speed input; RS485 interface; IP 69K; 2 switching outputs; measuring range +/- 25 g; frequency resolution adjustable 1.25 or 0.125 Hz; speed range 12...12,000 rpm</td>
</tr>
</tbody>
</table>

VE113A – compact unit for applications in hazardous areas; ATEX approval group II, category 2D / category 2G; vibration monitoring of up to 5 diagnosis values and 2 g-monitors

| Integrated history memory; optional speed input; RS485 interface; IP 69K; 1 switching output; measuring range +/- 25 g; frequency range 3...6,000 Hz; connection cable 5 m |

### Vibration diagnostic units

<table>
<thead>
<tr>
<th>Type VK – vibration monitoring of machines and equipment to DIN ISO 10816</th>
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</thead>
<tbody>
<tr>
<td>IP 67; 1 switching output and response delay (1...60 s) adjustable via setting ring; 1 analogue output (4 mA = 0 mm/s, 20 mA = 25 mm/s); connection M12 connector</td>
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<tr>
<th>VSE002 for vibration sensors type VSA</th>
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<tr>
<td>Control panel mounting; frequency-selective machine monitoring of up to 4 measurement points and 2 more process quantities; Ethernet interface TCP/IP; integrated history memory with real time clock; 2 switching outputs or 1 switching and 1 analogue output</td>
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<table>
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<tr>
<th>VSE100 for vibration sensors type VSA</th>
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<tr>
<td>Control cabinet mounting; frequency-selective machine monitoring of up to 4 measurement points; Ethernet interface TCP/IP; integrated history memory with real time clock; up to 8 freely configurable I/O; counter function</td>
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### Vibration sensors

<table>
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<tr>
<th>VSA001 for connection to external diagnostic electronic VSE</th>
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<tr>
<td>Measuring range +/- 25 g; IP 69K; frequency range 0...6,000 Hz; connection M12 connector</td>
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<table>
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<tr>
<th>VSA002 for connection to external diagnostic electronic VSE</th>
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<tbody>
<tr>
<td>Measuring range +/- 25 g; IP 67; frequency range 0...10,000 Hz; connection cable with cable plug M12</td>
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<tr>
<th>VSA003 for connection to the external diagnostic electronics VSE</th>
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<tr>
<td>Extremely small design; measuring range +/- 17.5 g; IP 67; frequency range 0...10,000 Hz; connection cable 1.5 m</td>
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### Online vibration monitoring – selection made easy

<table>
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<tr>
<th>Product series</th>
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<tbody>
<tr>
<td>VK</td>
</tr>
<tr>
<td>Standard vibration characteristic values / permanent machine protection</td>
</tr>
<tr>
<td>Internal trend memory / root cause analysis</td>
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<tr>
<td>Online diagnosis / advanced damage warning</td>
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<tr>
<td>Network capability</td>
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*Profibus-DP gateway
Overview ifm main catalogues:

- **Position sensors and object recognition**
  - Inductive sensors
  - Capacitive sensors
  - Magnetic sensors, cylinder sensors
  - Safety technology
  - Valve sensors
  - Photoelectric sensors
  - Object recognition
  - Encoders
  - Evaluation systems, power supplies
  - Connection technology

- **Fluid sensors and diagnostic systems**
  - Level sensors
  - Flow sensors
  - Pressure sensors
  - Temperature sensors
  - Diagnostic systems
  - Evaluation systems, power supplies
  - Connection technology

- **Bus systems**
  - Bus system AS-Interface
  - Power supplies
  - Connection technology

- **Identification systems**
  - Multicode reading systems
  - RF-identification systems
  - Power supplies
  - Connection technology

- **Control systems**
  - Control systems for mobile vehicles
  - Connection technology

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