The availability of machines and plants is a basic prerequisite for productivity in the glass industry. In order to avoid unscheduled downtimes, possible sources of error must be detected at an early stage. Mechanical wear in gearboxes or motors, especially in the bearings they contain, is often the cause of failure.

There are different strategies to prevent a failure. In the case of pre-determined maintenance, a repair is carried out at periodic intervals, irrespective of the wear condition of the components. In the case of condition-based maintenance, an inspection is first carried out and, if necessary, components are replaced or repaired. However, this leads to increased costs due to inspections, some of which are costly.

An alternative is predictive maintenance using a condition monitoring system. Mechanical condition data is recorded via sensors and the next maintenance date is determined on the basis of this data.

In this way, control stations always have the current states of the individual components at their disposal. In the event of anomalies, for example, it is possible to estimate how long safe operation will still be possible. Conversely, anomalies in a glass system can be directly compared with the condition of the components. From this it can be concluded whether a changed vibration behavior indicates a defective bearing.

Using the integrated web browser, damage type and course can be traced by means of frequency-selective analysis. The connection to the cloud-based MindSphere solution makes it possible to monitor globally distributed systems for service purposes and to reduce their downtimes.

## Advantages of Condition Monitoring

- Early detection of mechanical damage
- Simple integration of the condition monitoring of mechanical components into the automation system
- No additional software is required for parameterization and visualization
- Proactive maintenance through detailed and early localization of damage
- Fast full diagnostics at a glance
- Expert analysis on raw data basis via the analysis software CMS X-TOOLS
Early detection of damage and wear and tear and targeted planning of maintenance work

- **System advantages**
  - through simple system structure, open standards and simple expandability

- **Reduced costs**
  - through longer lifecycles, effective maintenance and spare parts management as well as investment protection.

- **Higher productivity**
  - through higher availability, predictable maintenance and repair and simple diagnostics.

- **Part of digitalization**
  - by capturing and analyzing mechanical quantities, connecting to the cloud, and decision support for service.

- **Different analysis options**
  - This enables the detection of the smallest details, e.g. the detection of gear tooth wear or the monitoring of variable speed drives.

- **Reduced downtimes**
  - through the worldwide analysis and monitoring of plants and the connection to MindSphere.

- **Smart financing solutions**
  - making SIPLUS CMS solution affordable through monthly payments over time. Ask your local Siemens representative for further details.

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