



Customer Success Story

Reliable monitoring around the clock – with OPTIME from Schaeffler

Schaeffler OPTIME prevented unplanned downtime in the supply systems at the Schaeffler plant in Schweinfurt, resulting in cost savings in the five-figure range.

Benefits

- Easy and rapid installation of OPTIME components.
- Easy data reading: no expert knowledge required.
- Greater security for employees, as access to hard-to-reach machinery is no longer required with the digital service.
- Cost-effective solution for comprehensive and wireless monitoring of units.
- Permits long-term planning of maintenance measures, personnel requirements, and in the management of replacement parts.
- Unplanned downtime is no longer an issue for monitored machines.

Customer

Schaeffler, location
Schweinfurt, Deutschland

Sector

Industry

Application

Motors, pumps, fans,
ventilators

Solution

Condition Monitoring

What our customer drives ...

Challenge

At the Schaeffler plant in Schweinfurt, rotating machines are used in a hardening shop around the clock, in addition to various supply systems. The Maintenance Manager, Detlev Jacobi, was looking for a reliable and cost-effective addition to the existing condition monitoring system, as downtimes in production systems caused by the failure of auxiliary units, such as motors, pumps, or fans for example, are always associated with high costs. Consequently, the primary aim of a new monitoring solution was to vastly reduce maintenance costs.

In addition, the solution was intended to provide better protection for personnel, as auxiliary units are generally difficult to access and therefore pose a safety risk. For this reason, the Maintenance Manager sought assistance from the Industry 4.0 experts within his own company.



Rapidly installed: A machine monitored with OPTIME in the hardening at Schaeffler in Schweinfurt



Detlev Jacobi, Maintenance Manager, Schaeffler Schweinfurt

*Since introducing OPTIME,
we have had no unplanned
downtime in the supply plant.
This is a good thing.*

Technical information on the hardening

6 lines, 130 t/day, 3 lines monitored with OPTIME

31 OPTIME sensors on circulating air fans

950–1500 rpm

Fixed and regulated speed

200 °C

2,2–10 kW

Technical information on the supply systems

50 ventilation and media supply systems

8 systems monitored with OPTIME

Approx. 100 OPTIME sensors on motors, pumps, ventilators, plunger block housing units, and belt drives

1500 rpm

Fixed and regulated speed

8–20 kW

What Schaeffler has to offer ...

Solution

The Schaeffler experts in Industry 4.0 recommended a comprehensive condition monitoring solution in the form of Schaeffler OPTIME. The Schaeffler OPTIME solution comprises wireless sensors, a gateway, and digital service. The sensors monitor the machines and devices. The gateway receives the data from the sensors and transfers these to the Schaeffler Cloud. The data are analyzed using the digital service and an error diagnosis is created on the basis of algorithms.

Customers receive clear statements about the condition of their machines via a mobile app. The installation of 130 sensors was completed in just a few hours. Consequently, hundreds of machines at the Schweinfurt plant are now monitored directly via the mobile app, and with great success. After just six months, an outer ring defect on the exhaust air motor and the threat of damage to the supply air motor were detected in a supply system (see status message opposite).



Performance data for the OPTIME sensor

Vibration bandwidth	10 Hz – 5 kHz
Calculated parameters	7
Sensor commissioning	NFC (Near Field Communication)
Communication	Wirepas Mesh (2.4 GHz ISM band)
Measurement cycle	Parameters: every 4 h Time signal: every 24 h

What's special

Schaeffler OPTIME is soon to be installed throughout the plant. The solution can be applied across sectors. OPTIME has been available on the European market since July 1, 2020.

Status report at the Schweinfurt plant

Status	Trend	Machine	Diagnose	Actions	First finding	Based on
!	→	Build. 26/2 Supply air motor	Advanced outer race defect of the bearing NU 313 ECP	Check the bearing and exchange it if necessary	24.02.2020	Raw data
▲	→	Build. 26/0 Exhaust air motor	High vibration amplitudes	Check the sensor mounting and the machine condition	24.02.2020	Raw data

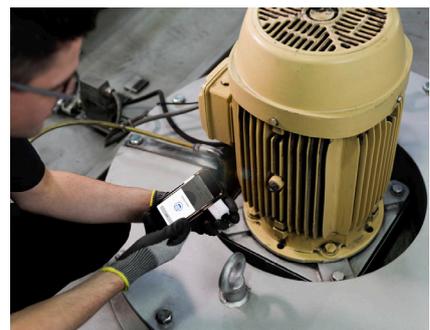
Machine status always identifiable at a glance via smartphone, tablet, or PC.



Schaeffler OPTIME is installed in the supply room.



The gateway is mounted on the wall.



Information on the machine status is displayed on the smartphone.

What our customer saves ...

Hardening

Costs of an unplanned downtime

Scrap up to	€ 6,800
Repairs up to	€ 3,900
Downtime up to	€ 4,300
Production losses up to	€ 50,000
Total costs	€ 65,000

Sample calculation

In total, there are 6 hardening facilities in Schweinfurt. Assuming a failure rate of 30%, this gives a potential annual saving of

€* 117,000

Supply systems

Costs of an unplanned downtime

Scrap up to	€ -
Repairs up to	€ 2,800
Downtime up to	€ 12,000
Production losses up to	€ -
Total costs	€ 14,800

Sample calculation

In total, there are 50 supply systems in Schweinfurt. Assuming a failure rate of 30%, this gives a potential annual saving of

€* 222,000

*The one-off acquisition costs and the annual costs for the digital service are to be deducted from this figure.

Customer

The Schaeffler Schweinfurt location is a key development location of the Schaeffler Group.

The Schweinfurt plant is inextricably linked with the FAG brand. In 1883, Friedrich Fischer designed the ball mill in Schweinfurt, which made it possible to use machines for the first time to produce high-precision steel balls in large volumes. The invention of spherical roller bearings is also associated with this location.

