Ford-Werke Plant

Comprehensive plant monitoring

Ford Cologne: increased energy efficiency with mioty

ifm's wireless monitoring solutions also boost system availability

The Ford plant in Cologne's Niehl district has been manufacturing vehicles for the global market since 1930. The Electric Vehicle Center has been one of the car manufacturer's most modern production sites since 2023.

Reducing energy consumption, avoiding emissions and using resources efficiently are key to further reducing the plant's energy and emissions footprint. The plant's paint shop also has its part to play, relying on sensors from automation specialist ifm – and on mioty wireless technology – for essential data acquisition.

Detecting wear and tear on conveyors

The car bodies have to travel a fair distance within the paint shop: after arriving, they are cleaned, then protected against corrosion through phosphating before receiving a final coat of paint. The body parts are then transported to the assembly floor on conveyors. These are powered by motors that have to constantly function reliably.

"We monitor the condition of the motors using ifm vibration sensors. This enables us to promptly identify impending damage and to utilise planned downtimes for maintenance," says **Stefan Blatt**, responsible for Condition Based Maintenance at Ford-Werke GmbH. *"We also measure the electricity consumption of the motors. If this increases, it is an indicator of wear or insufficient lubrication of the conveyor chains. Continuous, combined monitoring enables us to carry out maintenance work in a targeted, timely manner, thereby extending the service life of the systems and reducing operating costs."*

mioty: Wireless data transmission through concrete and steel

The electricity consumption is recorded via Sentinum's Hyperion electricity meter. The ifm subsidiary specialises in wireless sensors for smart buildings and production facilities through to fully networked smart cities. Sentinum's portfolio ranges from level sensors, floor monitoring systems, tracking sensors, through to electricity meters. All sensors are equipped with common Low Power Wide Area Network (LPWAN) technology, including mioty, an extremely robust wireless system that transmits data over several kilometres – or, in the case of Ford, through several thick concrete ceilings and steel structures.

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Important mode of transport:
defects on the conveyor would result in costly downtimes.

"Using mioty has brought us many benefits," explains **Stefan Blatt**. *"Starting with installation complexity. In the first test phase, we installed a mioty gateway in the paint shop, covering a large part of our work area. In total, the paint shop covers around 60,000 square metres, spread over the ground floor, first floor and top floor, separated by a great deal of steel and concrete. For example, the electricity meters are located under the roof of the paint shop. They send their data powerfully and reliably to the gateway, which is located deep within the building complex."*

Roller shutter monitoring to reduce heating costs

The same applies to the ifm sensors used to monitor a heavily used access roller shutter, and which transmit their data using a mioty adapter. Here too, the focus is upon saving energy.

"We can use the data to quickly identify whether the roller shutter is permanently open. If a defect is the cause, we can quickly repair the door. It is particularly important in winter that the roller shutters are mostly closed to reduce heating costs. On the other hand, during warmer days we can keep the roller shutters open for longer in order to cool and optimise the temperature of the working environment."

If the heavily used roller shutter door is left open for too long on cold days, the cost of heating will increase.

Simple retrofitting

In addition to an optical distance sensor, which recognises whether the door is open or closed based on the thickness of the roller, ifm temperature sensors were installed near the roller shutter both inside and outside.

"All we had to do was ensure there was a power supply to the sensors, which was not a problem," says **Stefan Blatt**.
"It would have been more complex, if not impossible, to install a wired network infrastructure on site."
Not just because the kilometres of cable required would have been hugely expensive.
"Here in the paint shop, we have a combination of explosion-protected areas and structural fire protection requirements, plus a solid construction. It is virtually impossible to plan an efficient cable route in a set-up like this at a later date. In addition, there are IT-related expenses that come with each new IP address in the system. Thanks to mioty technology, we were able to implement data collection for energy savings in a simple, uncomplicated way and make our contribution to increasing efficiency."

A photoelectric sensor checks whether the door is open or closed.

Energy consumption as an indicator of wear: the electricity sensor from ifm subsidiary Sentinum transmits the data to the IT level via mioty.

Positive conclusion and outlook

ifm's mioty solution was convincing from the very first field test: *"We will now definitely expand the mioty network with additional access points to supply the entire paint shop with wireless solutions. Expanding the network will enable us to collect and analyse even more data in real time, which will result in further optimisations and cost savings."*

Conclusion

With ifm's mioty solution for wireless data transmission, Ford has succeeded in realising important goals such as energy savings, predictive maintenance and system availability in the paint shop. The easy retrofitting of the wireless technology offers many more options for optimising energy efficiency and increasing system productivity.