The Smart Press Shop

Schuler's answer to Industry 4.0

At the Hot Stamping TechCenter in Göppingen, Schuler is currently conducting a field test on condition monitoring.

Like many other manufacturers, producers of discrete parts using metal forming presses face new challenges in terms of higher efficiencies, higher quality, and reduced waste. This is especially evident in the automotive industry – both for automobile manufacturers and suppliers to this industry. Schuler is responding to these challenges with solutions based on Industry 4.0 criteria: the Smart Press Shop.

In the intelligent and fully networked press shop of the future, it will be possible to predict potential downtime accurately with the aid of data collected from sophisticated sensors and actuators, and to avert this downtime well in advance. Removing disturbances and unplanned downtime will not only increase a plant's productivity. It should also increase the quality of the parts produced while minimizing waste and energy requirements.

The Smart Press Shop from Schuler, which is part of the family of Metris industrial IoT solutions, delivers improved reliability and increased cost-effectiveness within the forming technology sector. The system is suitable for use with both new and existing equipment.

MACHINE MONITORING SYSTEM

At the heart of Schuler's digital toolkit is its Machine Monitoring System (MMS). There are

six functional modules making up the MMS: Monitoring of Overall Equipment Effectiveness (OEE), Track & Trace, Process Monitoring, Condition Monitoring, Power Monitoring, and Smart Diagnostics. These modules collect, analyze, store, and evaluate production processes and machine conditions. The MMS can be ordered with new machinery from Schuler or retrofitted to existing machinery. In addition, the communications interface is very flexible: directly at the machine or via a plant network -- and in the future also from the cloud.

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> **Domenico Iacovelli,**
> CEO Schuler

A new Schuler press, the MSP 400 servo press, features process monitoring integrated into the control unit that ensures overload protection across the entire path of the pressing force profile. Under development is the capacity to integrate additional sensors (e.g. for acceleration, oscillation, or pressure) in order to enable comprehensive system condition monitoring and prevent unplanned downtime. In addition to productivity improvement, the process and condition data for each part produced will provide a basis for full quality control.

COMPLETE DOCUMENTATION

Schuler has also already demonstrated its ability to fully network different production facilities with its systems used by customers who manufacture train wheels. Among other things, this process requires data that is suitable for determining and increasing the overall equipment effectiveness (OEE Monitoring). This data is gathered by the system so that a quick glance is all it takes for the production manager to determine the total number of parts produced, how many of these parts are acceptable, and which shift had the best performance.

The data collected also serves as a basis for functions like Track & Trace of safety-related parts. The system links these parts to information on the initial material used and the material's origin, the system's lubrication and drawing force, and other production conditions. All of this makes it possible to provide a complete trail of documentation in the event of quality-related complaints (Process Monitoring).

"The digital transformation of the press shop is well underway," says Domenico Iacovelli, Schuler's CEO. "Major automakers and medium-sized suppliers can use the Smart Press Shop to achieve more efficient production and have fewer rejected parts. This helps them create and maintain the competitive edge they need." •

At EuroBLECH in Hanover, Schuler presented the new MSP 400 servo press with the Smart Assist operator software.