



Fritz Studer AG

Software-supported
sensor management



Simple human-machine dialogue

How the moneo|configure free software helps to maintain the quality and availability of precision machines.

Fritz Studer AG, based in Steffisburg, Switzerland, develops, manufactures and sells cylindrical grinding machines that are used in a wide range of industries. To ensure that the workpieces to be produced are always of the required quality, great importance is also attached to the precision and durability of the machines. Digitalisation solutions from ifm help the company to live up to this maxim over the entire life cycle of each machine.

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Swiss chronographs, aeroplane turbines, electric toothbrushes and, yes, sometimes even a patient's hip: Wherever high-precision manufactured components are used, they may have been machined in cylindrical grinding machines from STUDER. The Swiss manufacturer's machines have to grind to an accuracy of a tenth of a micrometre – only then can they leave the factory. The more demanding and complex the workpiece to be ground, the more complex and demanding the technology is that is incorporated in the machines themselves in order to perform the grinding processes with the required accuracy.

For more than 20 years, STUDER has relied on automation technology from ifm to ensure the habitual accuracy and durability despite increasing complexity.

Automation protects man and machine

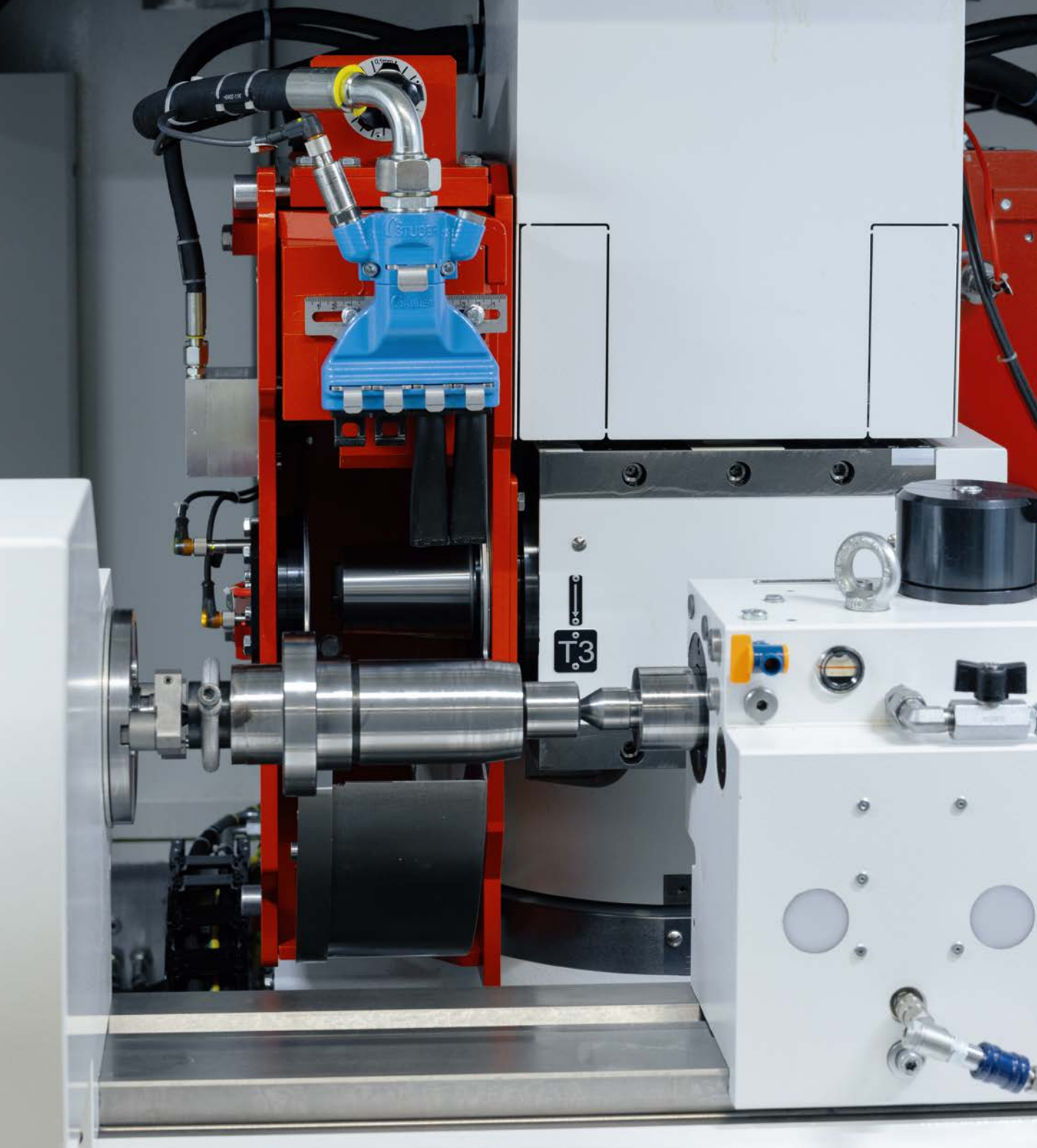
“Our machines are highly automated,” says Christoph Habegger, Service Instructor at STUDER. “For example, pressure sensors and flow sensors ensure that sufficient coolant is added to the grinding process to prevent damage to the workpiece and grinding wheel. There are also inductive safety sensors ensuring that the grinding head is in the correct position before the grinding process begins and that the machine is closed to prevent any danger to the operator. We also use vibration sensors on newer machines to further optimise condition monitoring and to maximise service life and process quality through predictive maintenance.”

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Direct connection to the IT level

Most of the sensors in STUDER's cylindrical grinding machines are connected to decentralised IO-Link master modules that, in turn, bundle the data and transmit it via field bus to the controller and also to the IT level in parallel. This simplifies sensor integration, as it reduces cable lengths and guarantees error-free connection between the sensor and the master thanks to standardised M12 connections. Another advantage of digital point-to-point communication via IO-Link: The parameters of the sensors can be saved on the respective master. If a sensor is defective and replaced by an identical sensor, the parameters are automatically transferred from the IO-Link master to the new device. This ensures safety when replacing sensors, and the replacement can also be carried out by people without specialist knowledge.

Numerous sensors ensure that the grinding process is carried out safely and correctly: A pressure sensor at the inlet for the coolant (centre of picture) controls the exact dosage, inductive safety sensors (left, above the workpiece) detect the position of the grinding wheel guard.





The flow monitor records the speed at which the coolant is supplied to the grinding process. The LED bar graph indicates the flow behaviour.

Software for simple IO-Link management

Since 2022, STUDER has been using moneo|configure free, the free software from ifm, in addition to the IO-Link hardware, to manage the IO-Link infrastructure conveniently and centrally. The scan function automatically analyses the existing network and virtually replicates it in a tree structure. With just a few clicks, IO-Link sensors can be specifically controlled and configured, and measured values and diagnostic data can be read out. Thanks to the online connection to the IODD database, the integration and configuration of IO-Link sensors is independent of the manufacturer. It is also possible to integrate more and more IO-Link masters from other manufacturers.

Data transparency brings many advantages

"Having used the LR Device parameter setting software from ifm since 2019, we are now relying on its successor, moneo|configure," says Daniel Josi, Service Instructor at STUDER.

"From our point of view, there are a number of aspects in favour of using the software. For example, it is no longer necessary to replace sensors preventively after a defined period of time. On the contrary, our colleagues in customer support can query the current status of every sensor in a machine and, therefore, quickly and precisely recognise and fix any malfunctions. Setting up new machines is also much more effective because we can clearly see the processes from the outset and set them up precisely. This is an advantage for us and especially for our customers, because it enables us to offer them even better support throughout the entire life cycle of their plant."

Data-based proof of quality

But STUDER does not just rely on the advantages of digital process analysis in customer service. STUDER also uses the possibilities of moneo|configure in the development, production and quality control of new machines.



With moneo|configure free, users can enter into a dialogue with sensors and masters within the IO-Link infrastructure. Data can be read and parameters can be transmitted.

"Thanks to the detailed database, we achieve a high level of process transparency. We can see, for example, where we can further optimise processes so that our machines run even more efficiently. We can also objectively log and verify the quality and accuracy of our systems based on real process data," says Daniel Josi.

Conclusion

By using moneo|configure free in conjunction with IO-Link, Fritz Studer AG is accelerating and simplifying the handling of automation components in its cylindrical grinding machines. Both development and customer service benefit from the data transparency, and so do STUDER's customers.