How can workpieces made of extremely expensive special materials be measured with micrometer precision or tested for special quality characteristics during production? The German company Wisatec in Schaafheim is the first choice for many manufacturers if they require the highest precision and need to test complex components, perhaps with the additional challenge of compensating for high temperatures or vibrations. Managing director Ralf Elbert knows what to do when a renowned car manufacturer wants to make sure that small tube filters whose net structure is invisible to the naked eye fully meet the quality requirements – without having to stop the conveyor belt during production.

Wisatec equipment handles the quality control of safety-relevant power plant components and can be found in the clean rooms of microelectronic production plants but it also measures consumer products used in daily life. The testing spectrum includes dimensional measuring technology, thread inspections, and surface inspections as well as layer thickness measurements, structure tests, and air permeability tests – to name just a few tasks. "Precision is becoming ever more important in almost all industrial sectors, whether to ensure that complex systems run smoothly, to save resources, or simply to stand out from the competition," Elbert confirms. When the managing director talks about the problems his

Wisatec Messtechnik GmbH, Germany

Perfection in measuring technology

For Wisatec, precision and productivity are the highest priorities. At the VISION trade fair in Stuttgart, the measuring technology company presented an automated testing machine equipped with two innovative cameras for testing 3-D objects or structured surfaces. A Simatic S7-1500 controller ensures that the measured results are processed quickly.
company has already solved, it is clear that he likes difficult challenges and gets to the root of things in the process. "Innovation starts with vision" is his creed.

**Collaboration between specialists**

To ensure that the testing equipment reaches its full potential, Wisatec works with leading sensor manufacturers for inductive, pneumatic, and optical measuring technology. The company's own know-how consists of selecting the most technologically and economically appropriate measuring method, building customer-specific measuring and testing equipment, and integrating this equipment into the customer’s manufacturing plant. Depending on the complexity of the task, the equipment can also be implemented as fully automated continuous-pass plants with the corresponding handling capabilities. The measured data can be used for automatic machine corrections or can be transmitted to higher-level quality management systems. The Wisatec offering includes planning, mechanical set-up, electro-technical equipment, programming, commissioning, and service. Special development projects have also been realized together with sensor manufacturers. "So far, we have found a solution for every requirement," Elbert says.

**Innovation in image processing**

In the area of optical measuring and testing, Wisatec partners with Keyence Deutschland, the leading manufacturer of optical measuring systems. Keyence presented two innovative 3-D cameras for testing 3-D objects or structured surfaces at the VISION trade fair in Stuttgart. The camera systems were shown in action in an automated testing machine from Wisatec. The testing machine is a flexible handling system that takes the parts that are to be tested off the running conveyor belt and delivers them in short sequence to various testing positions. If the parts pass the test, they are returned to the belt; if not, they are removed. Visitors to the trade fair could see the high resolution and measuring accuracy of the cameras for themselves on two Simatic flat-panel monitors. The plant is operated using a Simatic Comfort Panel.

**Production efficiency makes all the difference**

Regardless of what is being tested, the testing system must not threaten production efficiency. This is why speed always has top priority. The efficiency of the automated testing machine presented at the VISION trade fair is deter-
belts create a coordinate system that is rotated by 45°. The machine is configured and programmed in TIA Portal, including assigning the parameters of the Sinamics S120 converters, which are integrated as GSD files. The safety functions integrated into the Sinamics S120 make the drive solution affordable and efficient. The Sirius safety switching technology and the door safety switch with tumbler are also integrated into the TIA solution. Direct access to the Simatic S7-1500 is possible using a Scalance router, either via the customer’s network with VPN connections or via a mobile network for remote maintenance.

Integrated and future-proof

Elbert appreciates working with customers and suppliers on a partnership basis. This is why he also obtains all the automation and drive technology from one source. For him, the essential advantage is in the reduced training effort required. The result: his employees know TIA Portal perfectly. “The quality of the project benefits from this – and we can keep relatively tight schedules,” he says. Special highlights for him are the very efficient programming of the CPU 1511 with SCL and the step sequence programming with S7-Graph. “All our program flows are clearly structured as step sequences. The library concept with the option to store blocks globally results in additional synergies during the collaboration.”

The automation and drive technology chosen for the trade fair model is a Wisatec standard configuration that has already proven itself multiple times and can be flexibly adapted to different requirements. For instance, an additional Sinamics S120 double motor module suffices for two additional servo-axes – for example, to rotate and swivel the gripper. The Simatic S7-1500 would easily be able to handle the resulting additional coordination tasks.

Wisatec’s testing machine presented at the VISION trade fair

“Step sequence programming with S7-Graph is perfect for us, since all program flows are clearly structured as step sequences. Moreover, the library concept results in additional synergies during the collaboration.”

Ralf Elbert, Managing Director, Wisatec Messtechnik GmbH

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