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Zollner Elektronik AG puts its trust in Schatz mobile inspection systems

Zollner

Zollner Elektronik AG manufactures a huge variety of bolted joints, and it must ensure that they are reliable and compliant with the relevant standards. That's why Zollner puts its trust in mobile testing systems from Schatz, a Kistler Group company. Across many different industries, Schatz systems help to safeguard know-how and quality in the long term – playing a key part in preventing costly recalls.

If the term hidden champion didn't already exist, it would have to be invented to describe this company. Since 1965, when Zollner Elektronik AG was founded as a one-man business in Zandt (Bavaria), the firm has become one of Europe's most prominent electronics manufacturers. Mechatronic solutions with levels of vertical process integration tailored to each customer's wishes have placed Zollner among the world's top 15 providers of electronic manufacturing services (EMS). Single parts, modules, complete devices and even complex systems: Zollner's vast expertise covers all these product types, across diverse sectors of industry and for countless applications from rail technology engineering to telecommunications.

Bolted joints and screwed connections are indispensable elements of many electronic assemblies. They are used in printed circuit boards, control units and a host of other products manufactured to order by Zollner – all of them are held together by bolts and screws. VDI Guideline 2230 provides a standard for calculating and designing high-strength bolted joints – but new standards for specific applications are constantly being added in the numerous industries where Zollner operates. This creates a level of complexity that cannot be underestimated. Michael Zeller, who joined Zollner in 2007 and is responsible for test equipment monitoring and measurement technology, explains the situation: 'Over 2 000 torque tools are currently in use across our company. All bolted joints that are assembled with those tools have to be tested for compliance with the standards – and on top of that, the tools themselves have to be calibrated at regular intervals.'

Standard-compliant calibration of torque tools

This means that testing and documentation of all bolting processes is a key function that the company must perform to safeguard against system outages or product recalls. 'When I started at Zollner, most of the calibration work was still outsourced. But we weren't satisfied with the processes – especially as the solution that was implemented was only loosely based on the standard. That prompted our decision to consolidate all our know-how on bolt testing here in Zandt,' Mr. Zeller continues.

Since 2016, Zollner used combiTEST for standard-compliant testing and calibration of all torque tools, regardless of the manufacturer. The testing system from Schatz has been complemented by external simulators to avoid the need to dismantle tools for calibration purposes.

While seeking out suitable solution providers, Michael Zeller came across Schatz, the technology leader in the bolt testing sector and a member of the Kistler Group of Switzerland. He made contact with the company at a trade fair and was soon convinced, as he recalls: 'Schatz listened to us very carefully, and they were extremely flexible regarding implementation – they didn't just offer us off-the-peg solutions. That's exactly the sort of advice you hope to receive!' And the project is paying dividends: with over 2 000 torque tools that need calibration at least once a year, the annual cost savings amount to at least EUR 60 000 – and that doesn't even include the time gained while the tools would otherwise be out-of-house.

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Michael Zeller, Test equipment monitoring and Measurement technology at Zollner Elektronik AG
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Ceus 8.2 software for standard-compliant bolt testing

Assembly of bolted joints depends on controlling and monitoring many different variables. Preloading force – a critical factor in joint stability – is the result of interaction between torque, rotation angle and friction coefficients for the surfaces involved.

The server-compatible Ceus 8.2 software from Schatz can determine and record this data, so tools can be parameterized as required by the standards. Another plus: all measurement results can be displayed as graphics or statistics for comparison with the relevant standards. These advantages simplify test planning and process capability analyses – even when facilities are spread across different locations.

Which products is Zollner using at present? InspectPro is the system of choice for testing bolted joints during production: this portable testing system measures torque, preloading force and rotation angle, and it guarantees process capability for bolt assembly. Since 2016, the company has also used combiTEST for standard-compliant testing and calibration of all torque tools, regardless of the manufacturer. The testing system from Schatz has been complemented by external simulators to avoid the need to dismantle tools for calibration purposes. In addition, a handling system to make calibration even easier was integrated especially for Zollner.

Changeover to in-house solution completed in less than four months

Thanks to mobile testing systems from Schatz, Zollner has successfully improved its internal real net output ratio, and the firm has been able to accumulate immense know-how on the various bolting processes across different departments. Alongside the cost factor, process reliability also plays a critical part: 'All our customers have one thing in common: their technical requirements are increasing all the time. There are always new standards and guidelines to accommodate. So the more different sectors and customer groups we serve, the more standards we have to meet,' Michael Zeller notes.

Manufacturer-independent testing of all torque tools in compliance with the applicable standards, directives and guidelines has been an enormous success for Zollner: over 95% of calibrations are now performed in-house, with excellent efficiency in terms of costs and time. Rapid implementation was another reason for Zollner's exceptional level of satisfaction with Schatz. After Michael Zeller had convinced the Board of Directors with a cost-effectiveness calculation, less than four months passed between the start of work and the final training from Schatz.

Vision for the future: one standard, traceable testing chain across the globe

So it comes as no surprise that Zollner intends to continue expanding its collaboration with Schatz. Two additional InspectPro solutions are planned, as well as another combiTEST system for the firm's facilities in Hungary. 'It's going to become even more important to comply with all the standards and guidelines required for product liability. And traceability is another critical aspect,' Michael Zeller adds with conviction. That's why he has already developed a vision for the future, which he calls the 'professional testing chain': 'When the new Schatz combiTEST arrives for our sites in Hungary, we shall also implement the server solution for the first time. Our long-term goal is to have transparent data on the status of all tools at our 18 facilities across the globe – and what's more, to have automated input of new standard requirements. That would guarantee that each and every bolted joint required by our customers meets the standards – throughout the world.'

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