

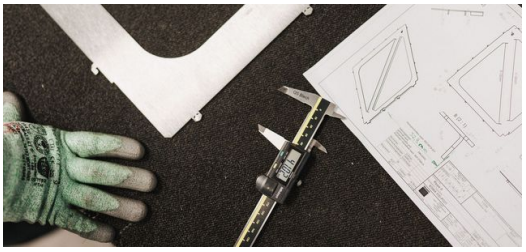
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How TRUMPF embraces quality

The Ditzingen site demonstrates how TRUMPF puts quality into practice – not as a tick-box exercise, but as the foundation upon which TRUMPF builds its entire business operations. During a tour of the development, production, testing, and customer service departments, Johannes Böttcher, Head of Quality for Machine Tools at TRUMPF, explains how this philosophy is applied in day-to-day operations. The goal is to provide early safeguards to avoid idle states, maintain stable delivery schedules, and give customers worldwide the certainty they need for planning.

A component from a TRUMPF production facility lies on a table in the high-tech company's development hall. It has a red label stamped with "Reject". One dimension is not correct. It is only one millimetre out, but enough to cause problems during machine assembly. "The part didn't pass the quality test," says Danijel Novak, quality inspector at TRUMPF. Next to him is Thomas Kieferle, responsible for quality in production in Ditzingen and Hettingen. 15 identical components from the same batch are lying on a pallet next door. Novak has also taken them out of circulation for the time being. Now the debate begins: Can TRUMPF still use them? Or do they have to be thrown away? Novak will carry out further tests to find out.

Johannes Böttcher is Head of Quality for Machine Tools at TRUMPF. What matters to him even more than the defective parts is what happens to the process underlying them. "Our goal is to continually scrutinise our processes and take remedial action as quickly as possible if something isn't working optimally." Today, he is giving a tour of the Ditzingen site, taking in goods receipt, production, along with th e testing and service departments. Anywhere where experts make decisions about quality long before a machine is delivered to the customer. "For us, quality is not a test step at the end," emphasises Böttcher. "It runs through the entire value chain." The rationale behind this is clear: the sooner TRUMPF detects deviations, the lower the effort, costs and risks for the customer's operations.





Detailed inspection: In Ditzingen, employees measure every component and document every deviation. Even the slightest deviation triggers an analysis before a part goes into assembly.

Communication: Johannes Böttcher (left) discusses quality issues directly on the component with quality inspector Danijel Novak. Decisions are made where they have an immediate impact – right on the production floor.



Quality culture: Marielouise Schäferling is driving quality throughout the company. Standards apply not only in production, but along the entire value chain.

Why quality matters early on

For Marielouise Schäferling, Head of Corporate Quality Management at TRUMPF, situations like this are not a rare occurrence, but part of the overall concept. "Quality is not something you check at the end," she explains. "It must be integrated into the system in such a way that discrepancies are detected early on – and accountability is clear." This starts right from goods receipt. This is where parts from suppliers and international TRUMPF plants arrive, and experts determine which ones are even allowed into production. Employees inspect components either in their entirety or on a random basis. hey measure, evaluate and reject them. "Everything that leaves this store must meet precisely defined quality standards," says Böttcher. "We do not ship parts that do not meet our requirements." At TRUMPF, quality is not a reactive but a proactive process. The high-tech company certifies suppliers early on, coordinates processes and sets standards. "We communicate a lot," says Böttcher, "both before and after the event." The aim si to achieve minimal rejects, little rework and reliable delivery dates. For customers, this means fewer unplanned delays and top quality along the entire supply chain.

Moving on to production: machines hum, components move through the systems. Quality assurance at TRUMPF is organised by product group. Four-person teams from Quality, Development, Production, and Service work together on a day-to-day basis. The quality assurance managers (QAMs) coordinate these efforts on an ongoing basis during daily production operations. The case involving Novak and Kieferle is a common occurrence. Not an escalated incident, but an educational one. "Quality assurance was successful here," says Kieferle later, "but only moderately." The error was discovered – but too late. "Our goal is for the worker to spot the error right away," says Kieferle. After all, any defective part that is detected too late increases the workload – and can directly impact throughput times and customer deadlines down the line. Marielouise Schäferling believes that quality at TRUMPF is not just an afterthought, but is systematically organised – and that this is a matter of leadership. "Standards only help if someone is responsible for them," she says.

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>
> Marielouise Schäferling, Head of Corporate Quality Management, TRUMPF

When software prevents idle states

Things are quieter in the testing department. The key players here are not machines, but screens, software and simulations. This is where Stefan Sailer, R&D Manager for Testing and Second-Level Support, works in Technical Service. "We are trying to digitally simulate machine behavior," explains Sailer. The goal is to test software before it causes real machines to crash. "We can simulate far more scenarios than on the real machine, without causing any idle states." Not everything has been processed yet. There are gaps in the material handling, and some effects can only be tested physically. Yet the approach is clear: the goal is to eliminate risks before they become costly. For Schäferling, this is precisely where the critical lever lies. "We gain an edge when we prevent mistakes before they cause damage", he confirms. "The sooner we learn, the less disadvantage there is for us and for the customer." Prepare cutting data, load the program onto the machine, perform laser

cutting and evaluate the results. Then rinse and repeat. This increases wear and tear on equipment, wastes production time, and qualified personnel are not always available. For these situations, TRUMPF experts have developed the Cutting Assistant.

Customer service as an early warning system

Technical Service completes the quality cycle at TRUMPF. Nowhere is the feedback from the market more direct and raw. That's when quality really shines through – namely, when a customer's machine breaks down or when a seemingly minor service issue arises. In Germany alone, around 14,000 cases are received each year – in other words, 300 per week. The scope ranges from a complete machine shutdown to inquiries about a spare part costing €2.30. The team resolves more than 80% of cases remotely or over the phone. Technical Guides have proven to be particularly effective in this regard: these are guides that clearly explain tried-and-tested solutions for common error codes. TRUMPF's approach to customer service has set the standard in the industry. "We are not a call centre" emphasises Bernard Kohl. "We have real experts here." He and his colleagues Alexander Mai, Tobias Böschek and Michael Dubberke talk to customers every day, analyse log data and error descriptions, and coordinate operations.



Quality assurance: Thomas Kieferle, Quality Officer for production at TRUMPF in Ditzingen and Hettingen, checks processes, intervenes in the event of deviations and ensures that standards are consistently implemented in day-to-day operations.



Simulation: At the test site, Stefan Sailer first checks the software versions using the digital model. This allows functions to be validated and risks to be identified before actual machines in the field are affected.



Teamwork: Technical Service and quality assurance staff in direct communication. Feedback from the field is systematically incorporated into development and planning.

”Depending on the nature of the problem, we dispatch a service engineer who is already familiar with that specific issue." This is how we ensure that the machine is back up and running quickly and that the customer can get their orders processed. "When there’s a crisis, we really shine," says Böschek. This makes the Technical Service team something of an early warning system for TRUMPF. What the employees learn here feeds back into development, testing and quality planning. That is precisely where our competitive edge lies – not just solving problems, but systematically preventing them. For customers, this means that issues are not only resolved more quickly, but in the best-case scenario, they aren't even noticeable in the first instance.

For Marielouise Schäferling, quality is much more than just a set of rules. It forms the foundation on which TRUMPF builds everything - from the simplestthe simplest machine to the high-end system. "Quality is not something you just stick on top," she says. "It supports the bigger picture." Accordingly, global quality management sets standards and continuously refines them – not in an abstract way, but in close alignment with the business units, the market and the customer. "Quality thrives on feedback," Schäferling emphasises. "And on leadership." TRUMPF has a clear focus on quality. This gives the company a

head start – not only in terms of its own competitiveness, but also in relation to customer success and satisfaction.



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