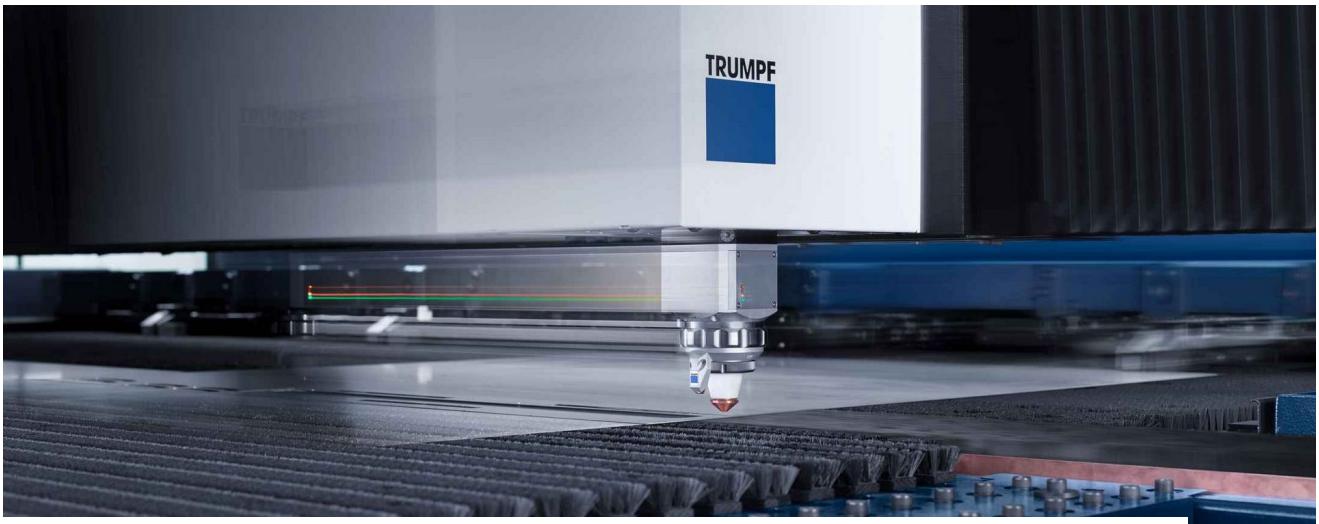


SVENJA FISCHER

# Problem detected - problem averted: How artificial intelligence supports axis diagnostics

**Artificial Intelligence (AI) is supporting TRUMPF in making great strides in simplifying, accelerating and improving the quality control system. The machine production plant for the TruLaser 5030 fiber machine collects a tremendous amount of data that the AI-solution analyzes automatically. If the AI solution detects an anomaly, it pinpoints where the fault lies and offers suggestions from its knowledge database on how to rectify it.**

"What's that whistling sound?" A TRUMPF customer standing next to their TruLaser 5030 fiber machine hears a strange noise – a noise they wouldn't normally expect a flatbed laser machine to make. They quickly grab their phone and point it at the machine. When the video they recorded reaches their contact at TRUMPF, the remote diagnostics process smoothly shifts into gear with a remarkable piece of software. Using artificial intelligence, or "AI", the quality manager analyses the noise and interprets the signal in combination with other diagnostic data gathered by the machine. The cause of the irritating noise is soon revealed as a loose screw on the cutting head clamp – and the AI system promptly suggests the appropriate solution.

## Young but wise

This process was made possible by the tremendous amount of data that the machine production plant collects every single day in Grüsch, Switzerland. During initial commissioning of the machines at the plant, sensors capture several thousand items of data in a quick test and send it through the controller to the cloud, where the AI solution performs an automatic analysis. That enables experts to run far more checks on the machine than you would normally get in a standard acceptance test. If the AI solution detects an anomaly, it not only pinpoints where the fault lies, but also offers suggestions from its knowledge database on how to rectify it.

## Hand in hand: Men and AI

This would all be a lot harder without AI, because the TruLaser 5030 fiber is a very complex machine with individual parts that are often engaged in very different tasks. The AI solution helps engineers make the right decisions, for instance by eliminating the risk of them replacing drive components in the TruLaser 5030 fiber that, in the worst case scenario, may not even be the cause of the problem. That saves time and resources.

**Artificial intelligence helps us to make production more efficient and to keep our products competitive. AI is the key technology of the future.**

Dr. Mathias Kammüller, Group Managing Director and Chief Digital Officer at TRUMPF

## Quality Control made by TRUMPF

The AI solution is making great strides in simplifying, accelerating and improving the quality control system. It draws on data that has been gathered from over 4,000 machines since 2014. Analyzed by human beings, this data has provided the material to teach the AI system – and now the system is capable of diagnosing problems entirely on its own. Engineers have been testing this process in Grüsch for the past six months, during which time 450 machines have passed through the production facility. The AI solution is constantly learning, with each new analysis expanding its knowledge and improving its ability to support TRUMPF's quality management procedures.

What role does AI play in quality assurance? And what's exciting about that? TRUMPF employees reveal more.

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TRAINEE

https://www.trumpf.com/en_INT/newsroom/stories/how-artificial-intelligence-supports-axis-diagnostics/