

The eoda | data science environment in action at TRUMPF Laser

Increasing the analytics maturity based on data and algorithms

Challenge

TRUMPF is world market and technology leader in the field of industrial lasers and laser systems. The TRUMPF laser technology offers CO₂ lasers, solid-state lasers, marking lasers as well as laser systems. To keep performance and quality high and prevent sudden machine failures, the company wants to implement predictive maintenance via data analyses and thereby increase the quality and availability of the machine.

Goal

The main goals of applying predictive maintenance to the laser machines were as follows:

- Introduction of data science for using the data
- Analysis of lasers with sensors producing countless machine data everyday
- Transparent and descriptive visualization of machine data
- Overarching workflows for supporting business processes between development, service, after sales and external as well as internal data scientists
- Introduction of algorithms for the recognition of error patterns and the prediction of future failures

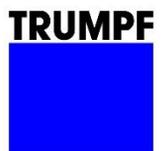
Basically, the goal was to increase the analytics maturity – based on data and algorithms.

Solution

In a first step, eoda helped TRUMPF to train their own data science team. This team combined domain and statistics know-how and thus was soon able to successfully identify and implement their first use cases.

The open source scripting language R was used for performing complex analyses of the machine data. It features an unparalleled range of functions for analyses, forecasts and visualizations and was employed by TRUMPF engineers after a short time.

The use cases were supposed to evaluate existing machine data sets, analyze them for anomalies and failures as well as display the results and forecast future problems.

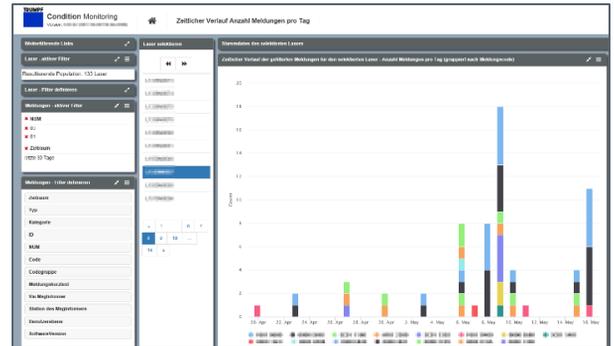


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The results of the analyses have lastingly convinced the technical departments involved as well as the management. During the further procedure, the focus was on the integration of data science into existing business processes.

A condition monitoring portal was therefore developed based on the eoda | data science environment. This condition monitoring portal enables our client to check the condition of the machines and optimize maintenance efforts and costs within the framework of predictive maintenance. The portal is an on-premise solution: TRUMPF keeps full control of the data and algorithms.



Number of messages (errors, malfunctions, maintenance etc.) per day grouped by types.

eoda | data science environment

With the eoda | data science environment – consisting of data science core and data science portal – we connect data science with your business processes to develop data or analytics-based processes and products.



data science
environment

Result

Thanks to the condition monitoring portal, machine data and trends can be visualized and analyzed in the form of dashboards, flexibly combinable widgets and graphics. Different departments, e.g. development, service or after sales, in different roles work together on different use cases – connected by workflows.

As a result, a maintenance strategy is implemented which detects errors in advance and thus prevents sudden machine failures. This enables the planning of optimal maintenance as well as the creation of new value added services based on data and algorithms.

“The eoda | data science environment enables us to solve problems before they actually occur. Thanks to the data evaluation in real time, we reduce downtimes, optimize processes and increase machine availability at the same time.”

Marco Holzer

Head of Product Management & Logistics Services | TRUMPF