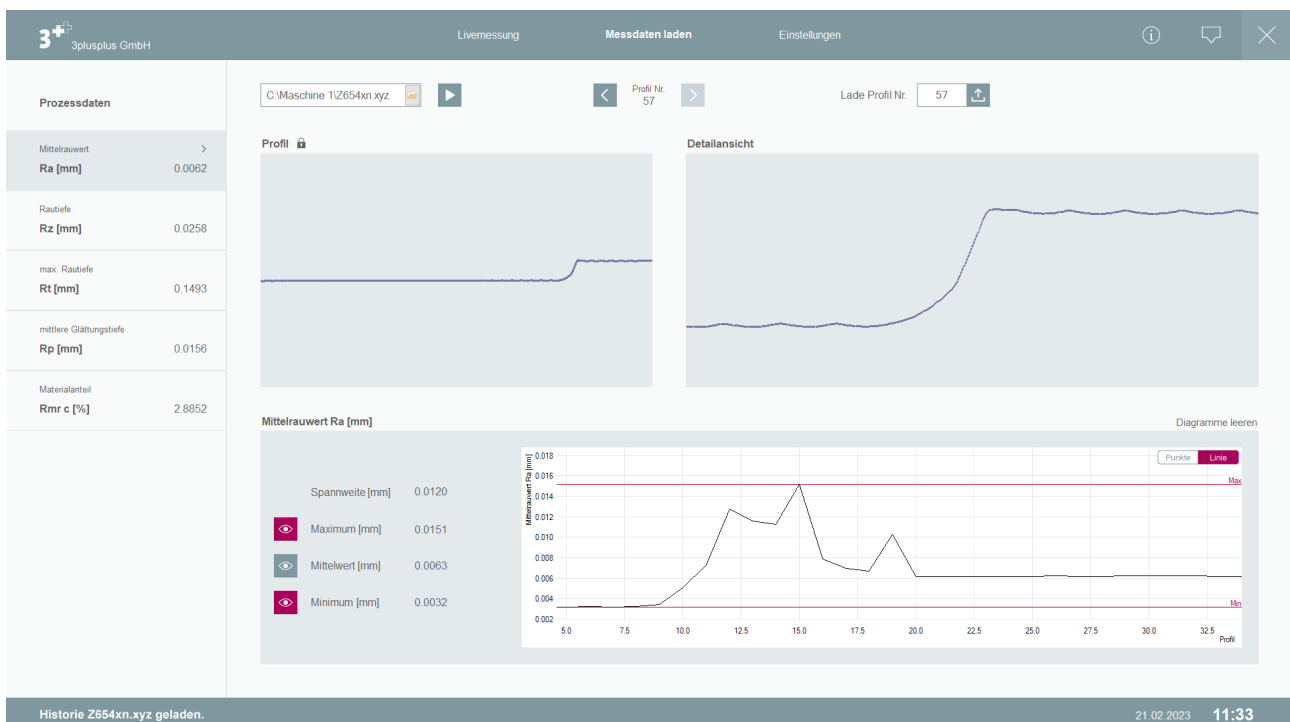


High standards with respect to the quality of turned workpieces are common in the machining industry. Surface roughness has a significant impact on properties of mechanical parts, including sliding friction, wear resistance or fatigue strength. It can also indicate deviations within the manufacturing process. The presence of grooves, for example, can indicate inappropriate tool condition as well as improper process parameters.

› Measurement principle & further measurements

A laser triangulation sensor is used to measure the workpiece surface. It can be integrated into the machine for inline measurement or used as an offline device at a measuring station. Besides roughness, geometrical parameters can be determined and structural elements like undercuts or chamfers can be inspected.

Integrated into the machine, the sensor facilitates the assessment of workpiece geometry and casting of the tool cutting edge. Therefore, the timing of tool change can be determined accurately. Adaption rules for the process-specific control parameters can be derived as well. An adaptive control can continuously adjust process parameters automatically by comparing the profile data with the required values.

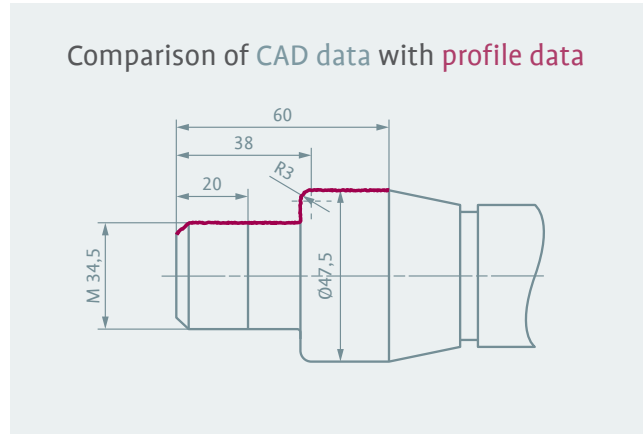


› Outlook

The derivation of the tool geometry enables an optimal metal removal rate while adhering to the required surface quality and workpiece geometry. Thus, the tool can be used more efficiently until its final wear limit. Resulting benefits are reduced downtimes for mold changes as well as more efficient utilization of process capacities.

In addition to the detection and adjustment of surface roughness, adaptive process control also enables the comparison of workpiece geometry and target values. In the automatically generated measurement report, component-specific quality characteristics can be displayed concisely and comprehensibly.

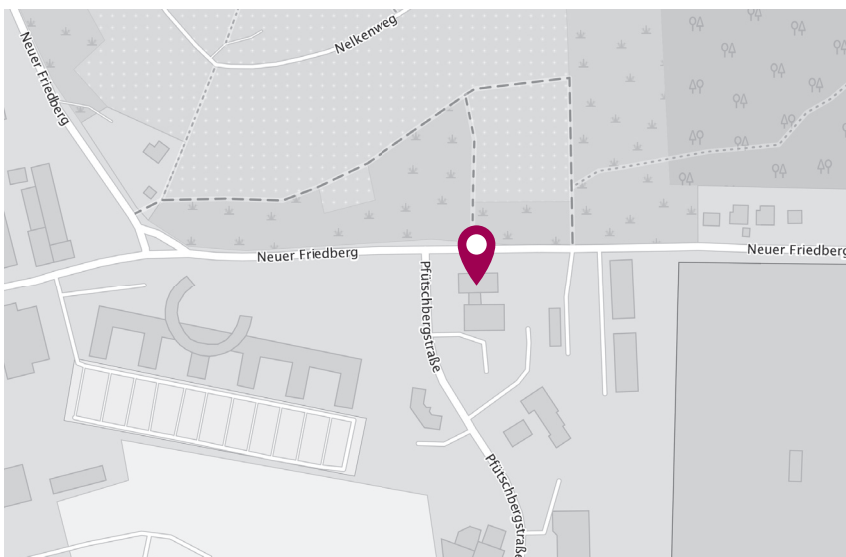
In the future, the system will be extended to include the manipulation of the infeed axis parallel to the process, the combination with AI and the integration of further sensors.



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