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The “fingerprint process”: Progress in determining the polishing performance

Temperature is a key to improving the economic efficiency of the polishing process

The “Menzerna fingerprint process” supports the measurement of all relevant parameters inline during polishing. This makes it possible to precisely determine differences in performance between various sanding and polishing agents, and to precisely establish and optimise different process configurations.

Menzerna is therefore able to provide industrial users with a decision-making aid based on data and facts for the development and design of polishing processes. For example, this process can be used to illustrate the influence of the work piece temperature on the economic efficiency of the polishing process.



Isolated analysis of the work piece temperature in process development

The material, type and quantity of the polishing agent, polishing time, contact pressure and type of polishing tool have a significant influence on the polishing results. With the “fingerprint process”, the effect of each of these parameters can be examined in isolation. This makes the complexity of automatic polishing processes manageable for the first time, allowing the processes to be optimised systematically. With the “fingerprint process”, Menzerna has succeeded in determining the optimum working temperature in the polishing process. Here the objective is to find the temperature range with the best polishing results under consideration of the melting point for the polishing compound.

The latest measuring technology directly in the robot cell

The robot system in the Menzerna technical center can accept work pieces of any kind and, with “inline measuring technology” that accompanies the process, take exact and reproducible measurements of the work piece temperature – for example depending on the contact pressure.

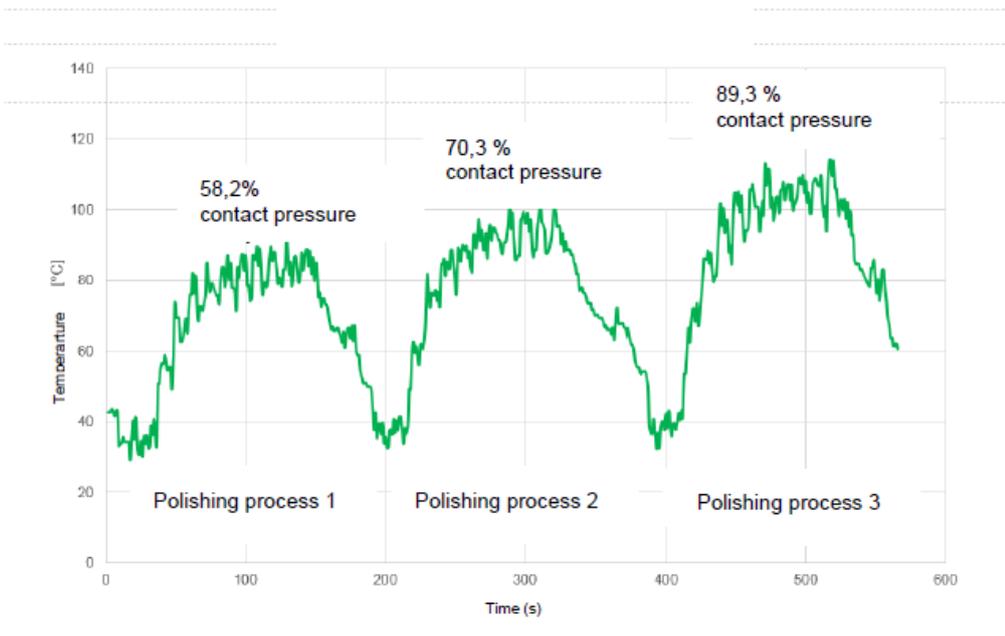


Figure 1 Temperature development in the robot cell during three polishing cycles with 10 passes each and different contact pressures

The cooling effect, the heating curves and the heat generated by polishing wheels can be visualised and measured with an infrared camera.

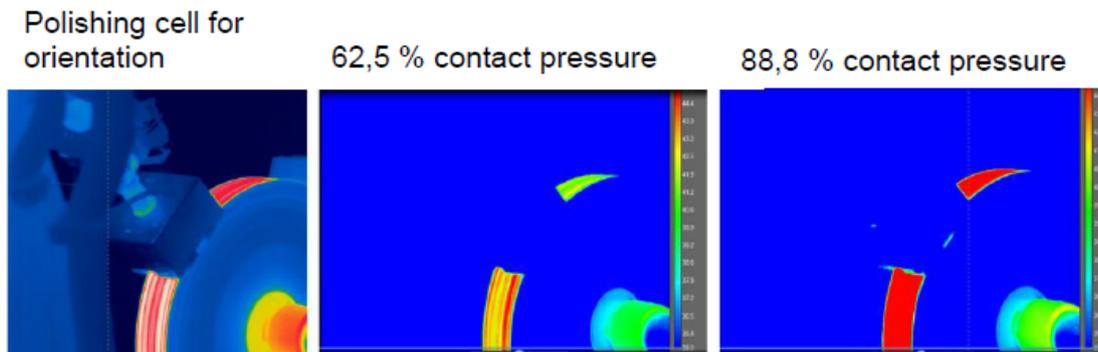


Figure 2 Temperature development on the polishing wheel during the polishing process with various contact pressures

This makes an objective evaluation of manufacturer information possible and supports the correct selection of a polishing tool that is suit-able for the work piece and the polishing process.

Comparison of measurement data reveals potential for improvement

The simple geometry of the planar sample panels, which are put through a standardised sanding process in advance, makes measurements possible with an accuracy that exceeds all previous possibilities. This test setup makes it possible to analyse numerous parameter combinations quickly and precisely with reproducible results. Individual parameters can be analysed according to the customer's wishes, while all others are kept constant at the same time. Effects on the polishing results can therefore be measured directly.

"Finally, a company is delivering measuring data instead of mere claims. This is the only way to make constructive decisions," one satisfied customer notes.

Focus on the economic efficiency of the customer process

With the "fingerprint process", Menzerna is driving a paradigm shift in the development of economically efficient polishing processes and products. Rudi Messmer, Product and Application Manager at Menzerna, says emphatically: "Trial and error tests and subjective assessments are a thing of the past. Reliable and reproducible measurement data form the basis for substantiated decisions."

With this knowledge of the optimum temperature range, application engineers at Menzerna are able to develop customer-specific polishing processes and optimise them in regards to polishing results, cycle time, consumption values and polishing tools.

Menzerna supports its project partners in the development of polishing processes, thereby establishing the foundation for a decision-making aid based on data to improve the economic efficiency of polishing.