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## New application method for industrial polishing processes

Higher productivity and improved surface quality

Emulsions and solid pastes have specific advantages in the polishing process. These are combined in a new application method. Solid polishing pastes are melted. This makes it possible to use them over longer distances and with no manual intervention. As a result new fields of application for solid pastes are opened up. Solid polishing pastes also produce a better surface quality than emulsions.



### The most important insights at a glance:

- Better surface quality
- Shorter processing times in the polishing process
- Improved process stability
- Industry 4.0 compatible
- System with proven standard elements from the adhesives industry
- Investment in application technology makes a yield of more than 10% possible

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*Perfection in Polishing.  
Made in Germany.  
Since 1888.*

Menzerna develops and produces polishes for industry and trades, automobile clear coats and gel coat surfaces of premium quality.

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## Reliable polishing process thanks to proven technology

A special technical system is needed for the new application method. It consists of standard elements that are already used in related applications. Integration into existing polishing systems does not constitute a problem. The system consists of a control unit, barrel press and dosing head.

### *From solid to conveyable polishing paste*

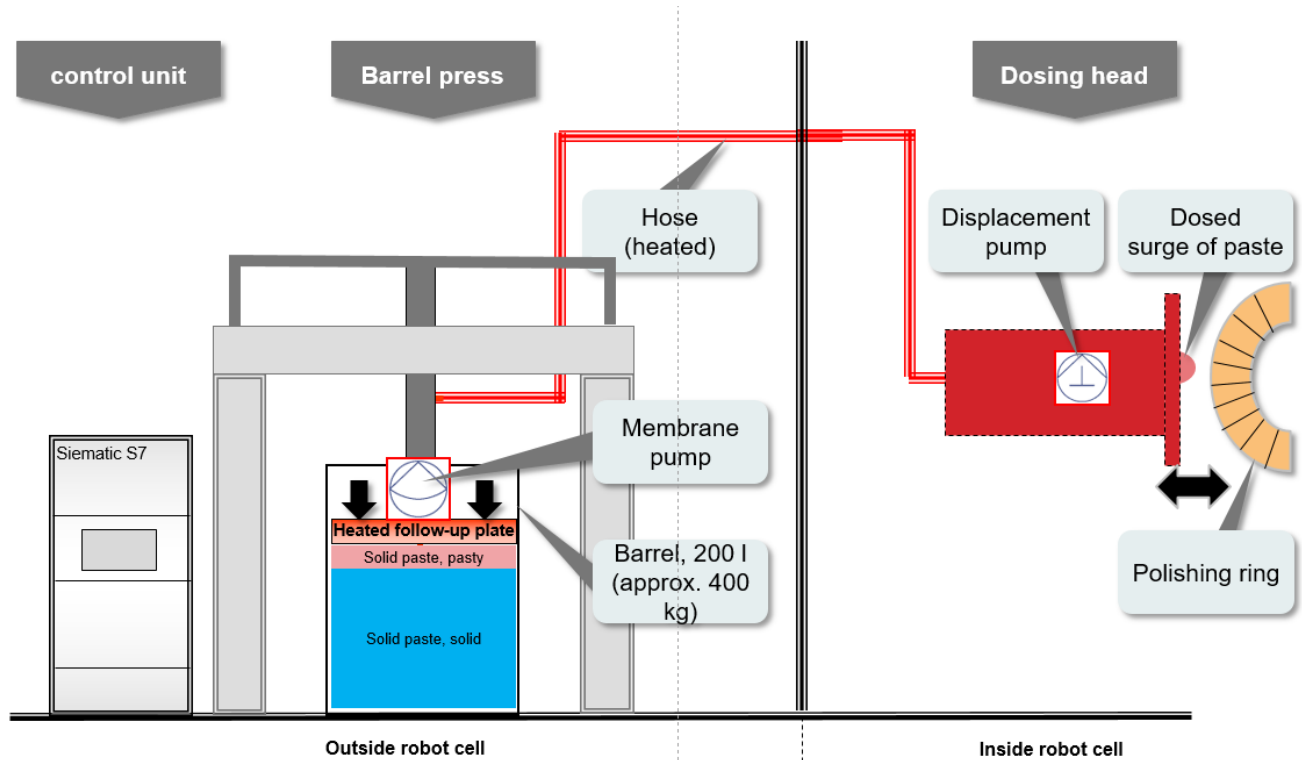
Polishing paste in solid form is delivered in a 200-litre barrel. A heated pressure plate lies in the barrel on the surface of the solid polishing paste. The pressure plate heats the paste during operation. This makes the top layer pasty and conveyable. A robust membrane pump conveys the viscous polishing paste through a heated hose system to a dosing head that applies the paste to the polishing ring.



**Figure 1:** MELT Pilot plant

### *Dosing head instead of spray gun*

The dosing head replaces the spray gun or the solid paste delivery equipment. It moves to the polishing tool at specified intervals. The dosing head is equipped with a displacement pump. It presses the polishing paste through a long but narrow slit in the dosing head. The polishing ring picks up the paste from a pressure plate on the dosing head. Multiple dosing heads on several polishing systems can be supplied at the same time by one barrel press. This is also possible over longer distances. The supply interval, paste quantity and other parameters can be precisely configured via the control unit.



**Figure 2:** Schematic layout of the system, illustrating how MELT works

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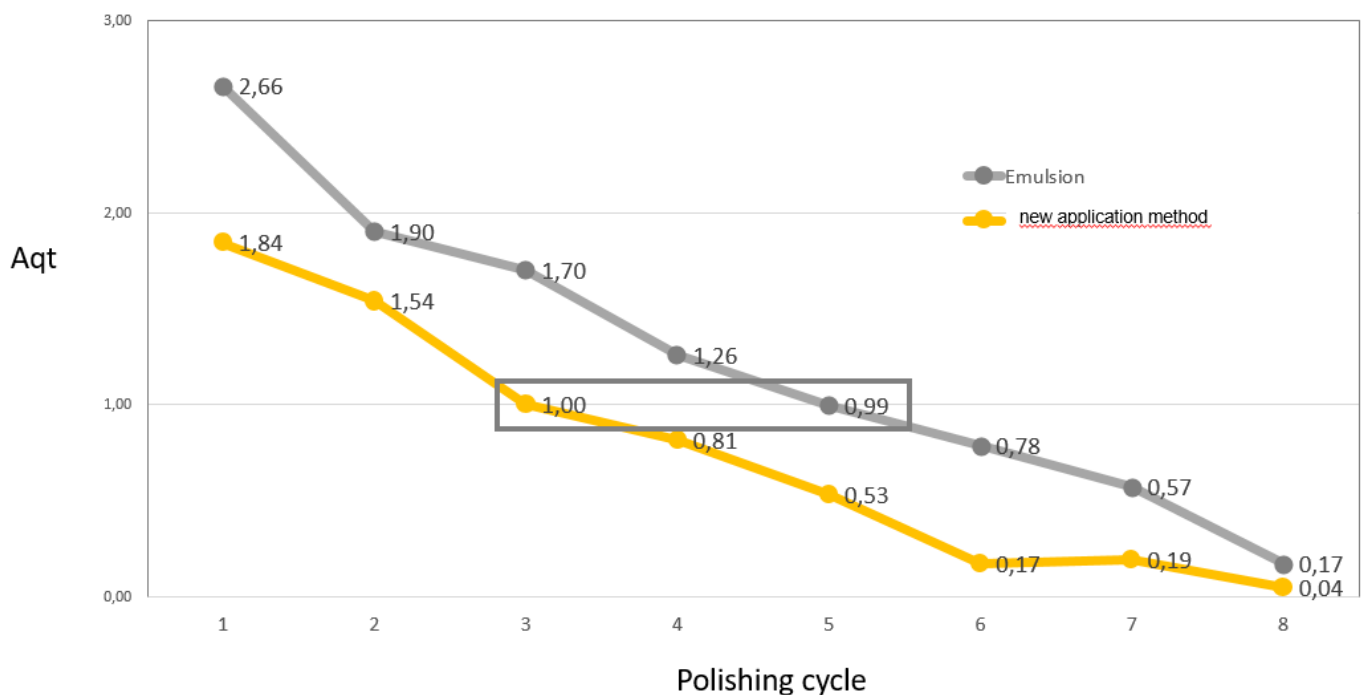
**Figure 3:** MELT Dosing head integration into an existing polishing system

## Clear benefits in the industrial polishing process

This new application method offers significant advantages. Especially for major consumers using liquid polishing pastes today. This is because the surface quality is considerably better when using solid polishing pastes. The processing time is significantly shorter as well.

### *Comparison of application methods and paste types*

Figure 4 compares the development of the Aqt value over several polishing cycles. Once with a solid paste using the new application method, and once with an emulsion in the conventional process. The Aqt value is determined by means of a scattered light measurement of the surface. The lower the Aqt value, the better the gloss value of the finished surface. How many polishing cycles are needed for a certain Aqt value was tested. The result was five for the emulsion. Only three were required when polishing with the melted solid paste. This means the conventional polishing process with emulsion is almost 70 % slower.



**Figure 4:** Aqt value comparison between an emulsion used in the conventional process and a solid paste used with MELT

### *Solid means stability, cleanliness and a long shelf life*

Solid polishing pastes also have a significantly longer **shelf life**. The risk of the bond “separating” is avoided as well. This improves the **stability of the process**. The **cleaning effort** in the robot cell is reduced as well.

### *Barrel instead of rod shape*

Users of solid polishing pastes in a rod shape also benefit from the new application method. By supplying the solid paste in a barrel, the possibility of rods breaking is excluded. The time without operator intervention is limited with the rod shaped polishing paste. That is because the rod has to be replaced manually at regular intervals. With the new application method, solid polishing paste from a barrel is conveyed through long lines. This means it can be used far longer without manual intervention.



	Emulsions	Solid paste	New application method
Surface quality	Good	Very good	Very good
Processing time	100 %	70 %	70 %
Stability of the process	High	Very high	Very high
Shelf life of the polishing compound	Limited	Unlimited	Unlimited
Cleaning effort	1.0 h / shift	0.5 h / shift	0.5 h / shift
Time without operator intervention	Unlimited	4-8 hours	Unlimited
"Industry 4.0" suitability	Conditionally suitable	Not suitable	Highly suitable

**Figure 5:** Overview of parameters illustrating the performance of the new application method compared to conventional processes

### *Industry 4.0 capability of the system boosts productivity*

The system is equipped with sensors and actuators. They read a variety of data during the polishing process. This results in important benefits for the user. It is easier to analyse and optimise a polishing process with precise data. The productivity and quality of the process are improved. Monitoring and maintenance of the system, internally or by external partners, is considerably simplified.



*Investment in the system is more economical*

Let us look at an example where a dosing head moves to a polishing system: even on the basis of very conservative assumptions, a yield of more than 10 % can be generated with an initial investment of approximately EUR 60,000. The possible yield is considerably higher for multiple robot cells. That is because several robot cells are supplied by one system and one barrel.

**Project is in the pilot phase**

The new application method is currently in the pilot phase. The final challenges are now being overcome in the course of live operation in an industrial brass processing company. Reliable data regarding productivity increases and quality improvements will be available after the pilot phase. Menzerna keeps you up to date. The market launch of the new application method is expected for the beginning of 2018.

**Conclusion**

A new application method combines the advantages of emulsions and solid polishing pastes. This results in considerable productivity increases and quality improvements in automated polishing processes. The technical system consists of proven standard elements. A solid polishing paste is melted and pumped to a dosing head on the polishing ring through heated lines. The new application method is currently in the pilot phase.

*The Author*

*Menzerna application engineers are revolutionising conventional application methods. In cooperation with Menzerna Development, they are designing the Menzerna Liquefaction Technology and solid paste formulations that can be melted repeatedly and conveyed through heated lines. This makes it possible for industrial customers to use solid polishing pastes in automated fields of application where only emulsions could be used up to now for economic and technical reasons.*