Super Polishing process description and the significant differences to electropolishing

Glossy surfaces for aesthetic and functional reasons are becoming increasingly important. A number of residues must be removed to generate high-gloss surfaces, which form during the manufacturing process of these parts. They form for example due to residues from the casting process, machining marks or from layers resulting from heat treatments or welding processes.

For those reasons there are polishing operations required, which provide surfaces without grooves and other structural defects in the surface geometry. Currently polishing effects are largely achieved by mechanical or chemical procedures and lately also by laser assisted processes. Each of these processes only applies to a limited set of materials and has restrictions with regards to costs, processing time and environmental impact.

A new method called Super Polishing is suitable to overcome the disadvantages of the conventional polishing methods.

This process is a supplement or problem solver of existing surface treatments with its attainable roughness values of less than 0,01 µm. The typical material loss during super polishing is 1 µm / minute which is 10 to 30 times smaller than electropolishing. The metal parts in the super polishing bath will not increase their temperature beyond 100 °C, also not superficially.

The process is well suited for polishing and deburring of milling, turning and investment castings. This process ensures dimensional stability and minimal chamfering to maintain the required tolerances. The surfaces of hardened components are polished. The super polish thermally brought in motion causes a combustion of organic surface layers by the oxidizing character of the process. But also inorganic substances on the surface can be oxidized and removed if the evaporating temperature or decomposition temperature of the products of reaction is less than 2000K.

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