



Special valve requirements in electropolishing systems

Valve designs for high-quality surface processing

Pickling, electropolishing and subsequent passivation are standard processes in many areas of surface finishing. The objective is to minimize the surface roughness of a metal by means of deburring, the removal of tips and edges, in order to make the material of a product more resistant. The processes in this removal procedure place very special requirements on the system design.

Process description:

Electropolishing systems comprise containers arranged next to each other in which the various process steps are carried out in sequence. The workpieces to be polished are moved from bath to bath and immersed by carriers with different designs in a fixed sequence. Metals are anodically removed by the effect of the electrical current in electrolytes; the workpiece acts as an anode during the finishing process, enabling a constant flow of current.

While corrosive acids such as sulphuric acid, phosphoric acid and nitric acid are used in the electrical pickling and polishing processes, valves and piping in the rinse cycles in between must be resistant to alkaline surfactants. What's more, to ensure the faultless operation of the baths, these are heated to various temperatures, sometimes up to 75 °C. Generally speaking, all metal parts in an electropolishing system are made from stainless steel in order to prevent the workpieces from being contaminated by "rust".

The basins, piping and valves, on the other hand, are manufactured from highly resistant plastics.

Polypropylene (PP) is often used in cold process areas. This material is not only resistant to diluted acids and alkalis but also has a good price-performance ratio in comparison with other high-performance thermoplastics. In warm areas, on the other hand, valves and piping are preferably made from polyvinylidene fluoride (PVDF).

Suitable GEMÜ products:

- GEMÜ R690, R677, 675 and 695 diaphragm valves
- GEMÜ 312, 550 globe valves
- GEMÜ 805 and 855 flowmeters
- GEMÜ D451 butterfly valves
- GEMÜ 717 ball valve

Key process data:

- Medium:
Corrosive acids, e.g. sulphuric acid, phosphoric acid or nitric acid, surfactants, hot and cold water, sewage
- Operating temperature:
20 to 75 °C
- Operating pressure:
Max. 6 bar



GEMÜ R690

GEMÜ 550

GEMÜ 717

GEMÜ D451

GEMÜ 805

Why GEMÜ:

From pre-treatment to pickling and electropolishing all the way through to neutralisation – each process step presents its own unique requirements for the system design, as different media are used for the various tasks.

GEMÜ offers a solution for electropolishing systems in all sectors – whether in the field of the plant periphery, for example for tempering the baths, or for the supply and removal of reagents as well as for the treatment of the media used in the corresponding baths.

Our broad selection of valve body and seal materials, as well as our expertise in the special requirements of surface finishing, enable the valves used in the system to be designed perfectly.

Our advisors will be happy to help you find the appropriate valves for your application.