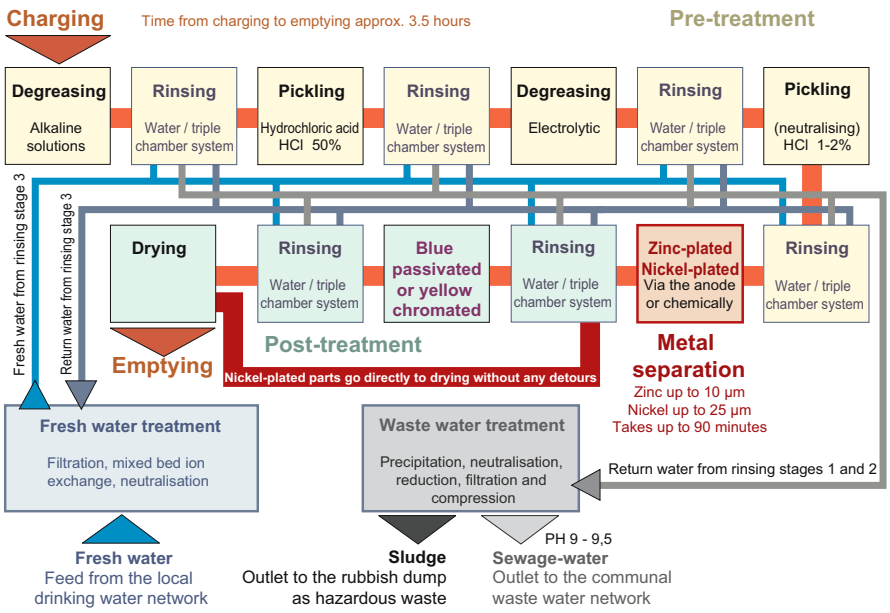
Product application for electroplating
Surface finishing for steel screws



Application

In order to protect steel screws, nuts, washers and nails, surfaces are finished using electroplating. This process consists of three process stages (pre-treatment, metal separation and post-treatment) and takes approx. 3.5 hours. During the course of this, the electroplating application only takes approx. 90 minutes. First, the parts which are manufactured from steel are degreased, cleaned and freed of materials which impede coating. Following this, they are immersed in an electrically conductive liquid (electrolyte). The application of direct current causes metallic components to migrate from the positive pole to the negative pole (the anode to the cathode) so that the anode material can be deposited on the surface (cathode) of the parts to be finished. The anode consists of the desired surface metal and continuously diminishes due to material migration. Therefore it must correspondingly be renewed. A different process already uses the desired surface material in dissolved form as a salt in the electrolytic liquid (e.g. nickel sulphate, chrome sulphate or zinc sulphate). Due to thinning the liquid, it is also necessary to re-concentrate the used “metal salt“ if applying this process. As it is always necessary to rinse between the individual production stages, water is also an important operating medium for electroplating applications.

Plant design

The plant consists of various immersion basins in which cages containing the parts are immersed. The cages are automatically driven by gripper and transport devices. The rinsing basins operate according to the triple chamber principle. The rinsing water in rinsing stage 3 is circulated and constantly recycled. Some of the water runs over the surge walls into the next respective rinsing basins (2 and 1). This rinsing water cannot be treated any longer and it is filtered through waste water treatment and neutralised chemically. The contaminated matter is precipitated and separated from the water. The solid components are disposed of at a rubbish dump as hazardous waste, the clarified waste water fed to the communal sewage-works and clarified again there. The depleted electrolytes are fed separately to the disposal system for chemical materials.

Solution

GEMÜ 617 and 677 manually operated plastic diaphragm valves and GEMÜ 600, 610, 690 and 667 pneumatically operated diaphragm valves provide a reliable and very long-term solution both for water and waste water treatment (PVC) and the electroplating process (PP). GEMÜ 52 to 225 solenoid valves are used in neutralisation for HCl and NaOH dosage. The application described here has now been running trouble-free for more than 25 years.

GEMÜ® VALVES, MEASUREMENT AND CONTROL SYSTEMS

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