

Innovations in coating processes

Hard anodising and electroless nickel plating are the main pillars of a coating service offering by AHC.

Coatings are a mission-critical component of the success of a huge range of products across myriad different Yet coatings are not always given the consideration they deserve. Experts in the coatings arena will tell you that prioritising the coating process – rather than only discussing it as an afterthought – leads design engineers to develop better performing products that last longer.

One such expert is Germany-headquartered AHC Oberflächentechnik, which has 19 sites in Europe and China. The group's business is focused on providing functional coating of technical surfaces as a service. Components for use in sectors including automotive, mechanical engineering, aerospace, oil and gas, medical-technical, and electronics are protected against corrosion and wear or given special properties by using AHC's range of developed processes. The group offers more than 40 coating processes and more than 100 process variants.

One coating process is hard anodising of aluminium alloys (going by the trade name HART-COAT®). This coating helps, for instance, to protect printing cylinders industries. for printing plates. These are mainly used in machines for flexographic, offset and letterpress printing.

According to the machine's requirements they are made of special aluminium. To enhance the wear resistance, the cylinders' surface is hard anodised with HART-COAT®. The coating's layers are built up by anodic oxidising in a specially formulated, cool, acidic electrolyte. By means of electric current, a protecting aluminium oxide layer is produced on the surface of the workpiece being treated. Compared to some conventional anodised layers, HART-COAT® layers are thicker and provide better wear resistance.



Printing cylinders with a HART-COAT® layer

Another application, hollow-shafts for CNC multi- spindle automatics, is related to AHC's second main pillar of coating: electroless nickel plating. The CNC multi-spindle automatics solution in question is designed as modular system. Customised configuration with up to 12 CNC cross-slides, Y-axes, synchronous spindles and further options enables high-productivity machining of bars as well as chucked parts. The V-shaped arrangement of the

tool carrier in every spindle position guarantees that only the tool holder determines the type of machining. Thus, external and internal machining can be carried out with fixed or driven tools at every station. Furthermore, the machine can also be configured as a twin three-spindle machine.

Hollow-shaft motor technology

The multi-spindle automatics are driven by a hollow-shaft motor technology in all work spindles. The shafts are coated with electroless nickel DURNI-COAT® to protect them against corrosion and wear. During the coating process nickel phosphorous alloy layers are deposited to surfaces with good adhesion. During electroless nickel plating the deposition takes place in an aqueous electrolyte with dissolved nickel ions. A reducing agent supplies phosphorus, which is uniformly incorporated into the nickel layer. The alloy deposition is based on a chemical reaction, so no external power source is required. This electroless process allows, unlike electroplating, an exact reproduction of the base material surface contours with an everywhere uniform layer thickness.

All the advantages of electroless nickel plating apply: corrosion resistance; wear resistance; ductility; and exact reproduction of the base material surface.



Delivery of a hollow-shaft with DURNI-COAT® surface to the customer