ENGINEERING COATINGS

Innovative and highly functional surface designs
Anyone in engineering, acting as a reliable market partner in the field of highly functional surface coatings, must understand materials and be able to think in the context of the final products.

The AHC Group, with their plants in Europe, has worked for more than 55 years to achieve an excellent reputation as a surface specialist in the mechanical engineering sector. AHC assumes responsibility and works with great diligence, such as with the electroless nickel plating (DURNI-COAT®) on rockers and various bolts of the drive mechanism of the “Alpina Blitz” roller coaster. It is 33 meters high and the main attraction at the NIGLOLAND Theme Park in Dolancourt, France. A maximum of 800 visitors per hour are accelerated at up to 4.3 g in its seats.

To understand materials: Highly functional components.
Rapidly rotating sliding guides for labelling systems are in enormous demand due to high production requirements. By using AHC’s HART-COAT® PLUS (hard anodising + PTFE) coating, the guide can be manufactured from the lightweight material AlMg3 (cast alloy). It has excellent wear resistance and impressive anti-friction characteristics.
In mechanical engineering, flexibility and speed are important success factors. More than 1,000 AHC group professionals bring passion, precision, experience and expertise to the most diverse engineering projects every day. Without stress, but with fast response times, coating solutions are developed and applied in order to process highly functional components, large and small, with the optimal coatings and to significantly improve their characteristics.

Overall there are more than 40 processes and over 100 process variants that the globally operating AHC Group offers to its customers.

We see ourselves as the reliable solution to your problems:
- Qualified technical advice from the outset
- Competent and uncomplicated project management
- Experience from thousands of engineering projects
- Intelligent surface designs for small standard parts
- Intelligent surface designs for complex production facility components
- Highest precision and quality for your components

AHC has been a reliable market partner with Krones for decades. The globally active group employs more than 6,000 people at its headquarters in Neutraubling alone. Krones AG primarily plans, develops and manufactures machinery and complete systems for the process, filling and packaging technology sectors.

The publicly listed market leader can opt for lighter materials without having to forgo high functional reliability, thanks to AHC’s surface technology solutions.
Proven technology for consistently high coating quality. Every day at AHC individual parts, small scale productions and mass produced components are meticulously and reliably coated. As shown here, at AHC Munich, where a part for the mechanical engineering sector is discussed just before hard-coating with HART-COAT®. In total, the AHC Group has more than 100 different facilities for surface finishing of components in its European plants. This also includes Europe’s largest electroless nickel plant for serial and small parts in Weiterstadt (Hesse).
Small components. High standards.

Precision down to the last detail. This applies to the entire processing operation. The best possible AHC coating for your requirements is determined well before your series components are processed.

Own electrolytes allow higher standards

Which technology is best for your components? How many microns (µm) of coating must be applied? Which requirements must be met? We have the answers to these and many other questions ready for you, thereby meeting the highest demands for functionality. As market leaders for repeatable processes in surface technology, we can promptly make individual adjustments, since our electrolytes are specially manufactured for us by our subsidiary RIAG Oberflächen-technik AG in Switzerland. Complete digital documentation of all process steps is a matter of course.

Your components are in good hands with us: Test coatings are carried out before the first serial production begins in AHC Group’s ultra-modern and fully automated large scale production facilities. Through exact specifications, your products obtain excellent functional properties and all their strengths come into play later in industrial use.

A selection of our engineering references:

- ALFRED SCHÜTZE APPARATEBAU
- APPARATEBAU GAUTING
- AUGUST DRECKSHAGE
- BITZER KÜHLMASCHINENBAU
- DIETZE & SCHOLL MASCHINENFABRIK
- ENGEL • ERHARDT + LEIMER
- FETTE COMPACTING • FLOTTFEG SE
- GARDNER DENERVER DEUTSCHLAND
- GEORG AIGNER MASCHINENBAU
- GRIP FACTORY MUNICH
- GÜDEL
- H.-H. FOCKE MASCHINENBAU
- HEIDELBERGER DRUCKMASCHINEN
- HEINO ISEMANN
- H. GREVE MASCHINEN- U. APPARATEBAU
- HOLZ AUTOMATION
- HOMAG HOLZBEARBEITUNGSSYSTEME
- HOSOKAWA ALPINE
- IBD WICKE TECHNIK
- ILLIG MASCHINENBAU
- INDEX-WERKE HAHN & TESSKY
- KNAPEHIDE
- KOENIG & BAUER
- KOLBUS
- KRONES
- KTR KUPPLUNGSTECHNIK
- KUKA ROBOTER
- LMT FETTE WERKZEUGTECHNIK
- MACK RIDES
- MASCHINENFABRIK MÖNNINGHOFF
- NADELLA
- OERLIKON TEXTILE
- PERNUMA
- REIFENHÄUSER BLOWN FILM
- ROSA SISTEMI
- ROVEMA
- SBS MASCHINENFABRIK
- SCHAFFLER TECHNOLOGIES
- SCHNEEBERGER
- SEEBACH
- SKF
- SPECK-KOLBENPUMPFABRIK
- SPIKLER
- SPRIMAG SPRITZMASCHINENBAU
- STAMA MASCHINENFABRIK
- STARRAG GROUP
- SPINDELFABRIK SUESSEN
- VEMAG MASCHINENBAU
- VOITH TURBO
- WEBER SCHRAUBAUTOMATEN
- WIAG ANTRIEBSTECHNIK
- ZELTWANGER MASCHINENBAU

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The Grip Factory Munich (GFM) is one of the most renowned manufacturers of professional camera equipment. Cranes, dollies etc. are used worldwide e.g., for shooting in Hollywood, at sporting world championships or for spectacular advertising shootings.
The GF-8 Xten Crane System has established itself as an industry standard and is today probably the most popular platform and remote crane system on the market. The system stands out with its lightweight aluminium design and is quick and easy to assemble, dismantle and modify. Due to the AHC HART-COAT® coating the component surfaces of the crane are extremely stable and wear resistant.
HART-COAT® technology plays an outstanding role at AHC. The AHC Group offers this process at thirteen locations in Europe and one location in China, and each year anodises more than half a billion components. Among them are many components from the field of mechanical engineering.

A special plus is the capacity that the AHC Group offers its customers. There are fully automatic HART-COAT® plants available for components from a few centimetres in length up to 8 meters (!). The HART-COAT® process offers more space and function for lightweight components. The layer properties vary depending on the respective alloys and process variants:

- high wear resistance
- improved corrosion resistance
- increase in hardness
- optimum anti-friction behaviour
- optimal layer adhesion
- high thermal insulation
- high electrical insulation effect
- good dimensional accuracy

In the movies! Long lasting protection for lightweight aluminium components.

The electromechanical GFM Dolly systems feature an incredible functional diversity and variability. As is customary at GFM, the CNC turned and milled lightweight aluminium components of all systems are coated with HART-COAT® from AHC.

The coating ensures a distinctly better protection and longer lifespan of the surfaces. The resulting “olive green” look has established itself in the film industry as the GFM trademark for extremely robust camera equipment.

The GF-Tele Jib was developed in order to meet the demand for a lightweight, stable and variable length Jib arm. The Jib-arm components are manufactured from aluminium and have a very hard and durable surface protection (HART-COAT®).
AHC advises young mechanical engineers on coating a shaft for CNC multi-spindle lathes with the electroless nickel plating DURNI-COAT® (DNC). In the picture below the shafts are prepared for the coating in a special frame at the fully automatic DNC plant at the AHC Eschenbach works.
Reliable and responsible

Particularly in mechanical engineering, the AHC Group takes care of the final steps prior to assembly of elements, often for the “finishing touches” before systems then go into operation. This can involve anything from components of a few centimetres in length to large components with complex geometry and individual values of tens of thousands of euros.

It is therefore particularly important that a great deal of meticulousness and consistent quality management are applied to the work right from the very start of the project. This is only possible with highly qualified personnel. AHC is proud that our specialists operate professionally in each area of the plant, be that in project consultation, coating, post-treatment (e.g., hardening) or in quality control.

This qualification and reliability are also reflected in the component finishing of your products.

Scrupulous quality management: Each functionally refined component that leaves our plants is previously put through rigorous tests. This includes a layer thickness measurement (foreground) and a visual inspection (background).

The AHC Group offers a range of process technologies. Among them the downstream heat treatment under inert gas conditions for modifying surface hardness.
Quality counts: technical discussion between sales management and a DNC plant operator at the AHC works in Eschenbach, Göppingen-Voralb.
First-class process technology for the finishing touches.

Apart from the motivated and qualified personnel there are of course the technical possibilities that have a bearing on the quality of the functional finishing. The various facilities of the AHC Group are on the cutting edge of technology.

Ultramodern facilities and automated operational procedures ensure precise surface qualities every time. In addition to the reproducible processing quality we also always have efficiency in mind and offer cost-effective solutions.

This also includes optimum frame technologies and robot-controlled handling, as well as innovative and responsible energy and environmental management.

Electroless nickel plating with the DURNI-COAT® process gives shafts diverse functional properties:

- high wear resistance
- good dimensional stability
- increase in hardness
- improved corrosion resistance
- good chemical resistance
- optimum anti-friction characteristics

The coated shafts are used in CNC multi-spindle lathes. Its core comprises 6 fluid-cooled motor spindles integrated in the spindle drum.
Assembly system with multiple spindles in use
(Source: Weber)
The right twist for your specific application.

In mechanical engineering, there are numerous examples of the use of electroless nickel-plated components such as, for example, stationary threaded spindles with automatic supply for fully automated assembly tasks.

The spindles are suitable for handling of screws, nuts, threaded bolts and other threaded components. The housings of the spindles are made in mono-block construction and, as with other components, are made from a high strength aluminium alloy. For these spindles the DNC-AL process is used, which creates both indoor and outdoor wear-resistant surfaces through accurate contour reproduction.

DNC-AL offers good wear protection and high corrosion resistance. The silvery surface gives the spindles a technical, decorative appearance. Solid particles such as PTFE (polytetrafluoroethylene) can also be integrated evenly in the electroless nickel layer. Thus, the dynamic friction is reduced significantly and abrasion is suppressed. The dry lubricant in the layer also prevents adhesion wear.

Keep machine components free of glue.

To prevent machine elements becoming contaminated by hot glue, AHC provides these components with a special surface coating. This layer, TUFRA® 61SP, on the one hand protects against the adhesion of the glue to the components, and on the other hand, TUFRA® 61SP is extremely chemically resistant to aggressive cleaning agents such as hydrogen peroxide.
Spilker pressure cylinder for receiving printing plates mainly found in flexographic, offset and letterpress machine usage. The hard anodised coating provides increased wear protection. Base material EN AW-6060 (AlMgSi), layer thickness 50 µm.

HART-COAT® Plus black (layer thickness 60 µm ± 10 µm) coated gear housing made of EN AW-5083 (AlCu4PbMgMn)): Perfect corrosion protection for dynamic speed control for generators (wind turbines). The layer thickness is 32 µm ± 4 µm.

KEPLA-COAT® white coated rotor of a turbo-molecular pump (base material AlCu2MgNi). The layer of 25 µm ± 5 µm increases wear protection and ensures smooth operation under vacuum conditions.

DNC 520-AL-coated housing for absolute encoders (Base material: EN AW-2007 (AlCu4PbMgMn)): Perfect corrosion protection for dynamic speed control for generators (wind turbines). The layer thickness is 32 µm ± 4 µm.

Hard coated (layer thickness 65 µm) toothed pulley wheels of the renowned WIAG Antriebstechnik GmbH perform important tasks in printing presses from Heidelberger Druckmaschinen AG, the world market leader in the field of sheetfed offset printing machines.
Diverse and innovative. Immediately and permanently ready for action.

The mechanical engineering industrial sector is one of the most diverse and innovative fields in the world. In Germany, mechanical engineering has a great tradition and this is also true of AHC Oberflächentechnik, who functionally refine components for modules, complete machines, production lines, transportation technology, etc., by applying their various coatings. AHC is a reliable partner of the mechanical engineering sector and importantly offers improved performance in project work.

HART-COAT®-GL coated (25 µm) lever & knife carrier for asparagus peeling machine. The layer protects against corrosion and here provides improved cleaning and wear properties.

Industrial high performance asparagus peeling machine from HEPRO.

Guide (for bookbinding machine), coated with a combination of 15 µm DNC S20 and 15 µm PTFE DURNI-DISP to optimise anti-friction behaviour.

Flap (for bookbinding machine), electroless nickel plated with 30 µm DNC 450 to increase wear and corrosion resistance.

High performance Kolbus bookbinding machine (KM 600).
AHC takes responsibility

AHC is your reliable partner for project work and offers technical service with responsibility and passion. Large series and valuable components are entrusted to us daily and we coat them with diligence.

With more than 1000 employees in over 20 plants, AHC annually processes a billion components for all key industries.

We will be delighted to assist you.