



Free Form Surfaces

English

Surface solutions by STI Group



Customized Surface Solutions



The demands for the technical performance and commercial viability of surface treatments are becoming more and more exacting. With the right surface, the performance of components can be improved to provide better corrosion, wear and temperature resistance. High quality surfaces designed for the required application enhance the service life and durability of components.

Vision and experience

For decades, STI Group has been acquiring specific know-how in the surface treatment of free-form surfaces. With specialized rigs, precisely set anodes and auxiliary anodes, and a good deal of personal experience, STI experts achieve an even coating distribution and compliance with the specified shape and dimensional tolerances. This requires not only technical expertise in the field of surface technology but also a good understanding of the applications for which the components, regardless of size and complexity, will be used.

The right coating for each function

A number of technologies are available - using different processes and materials, and producing a range of properties, with the aim of achieving individually optimized and reproducible surface characteristics. Due to its excellent wear resistance, its great hardness (without distorting the base material), its good adhesion to the base material, its anti-adhesive surface characteristics and its low friction coefficient, the hard chrome coating process is ideally suited as a surface treatment. In addition, we use galvanic or electroless nickel coating, on its own or in combination: ductile galvanic nickel finishes are non-porous and provide excellent corrosion protection; electroless nickel coating is also corrosion resistant and is used for components with complex geometries that have to retain their dimensions and contours. An alternative is thermal spray coating. This is very flexible with regard to combining base materials and coating materials.

Tried and tested infrastructures

With our modern infrastructure we are able to offer reliable processes and flexible availability of our capacity and resources, as well as efficient processing of components, from the simplest to

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the most complex. Our cleaning and coating baths vary in size to suit different component dimensions and give us the flexibility to accommodate a wide range of requirements. For repeat orders we store the respective equipment so that we can guarantee consistent quality at attractive prices. We are also flexible and reliable regarding logistics - if you wish we can have your items collected and returned to you.



Successful applications

STI technologies provide high performance, functional surfaces of superior quality. We can treat your components to your specification to suit the required application, making them tougher, with a longer service life, and resistant to aggressive or abrasive media or onerous operating conditions.

The production of plastic parts involves chromium plated [form cores in injection molding tools](#). For mass production, surface characteristics such as enhanced wear and corrosion resistance and improved anti-friction properties are essential. Chromium plated form cores are particularly suitable for deforming due to their smooth surface characteristics. Other coatings supplied by STI Group on a regular basis are dimensionally exact chrome platings and surfaces with good adhesion to the base material. We will provide top quality, dimensionally accurate coating for your components.



[Callottes for bridge bearings](#) are a classic application. They are exposed to extreme temperature fluctuations and have to be able to withstand saltwater, heavy wear and corrosion. While the base material is selected to suit the respective application, high quality hard chromium plating provides an ideal, hard wearing surface. After chromium plating the surface roughness of the base material of over 100 μm is nearly retained so that, in most cases, it is only necessary to apply an industrial polishing process.

The [feed mechanism of assembly robots](#) must be protected against abrasion and wear. When these components are chromium plated at a bath temperature of 50°C, there will be no distortion to the part and no rework is required. With a layer thickness of 20 - 40 μm and a hardness of 800 - 900 HV 0.1, these feeder components (fully finished and unhardened) receive excellent wear protection. Feeder components in need of resurfacing can simply be stripped,



polished and re-coated, giving them a full new service life for use in the production process.

Environmental management to ISO 14001

STI Group takes the protection of the environment very serious. All our processes are scrutinized in view of environmental impacts. Our production facilities are not only equipped with waste air and waste water treatment plants but are also designed for efficient re-use of process media in the production chain.

Mechanical production technology

The mechanical processing of (un)coated surfaces is equally as important as the selection of the right coating process. With its modern turning, milling, grinding and polishing machinery, STI Group can produce highly accurate finishes to specified tolerances in the micron range.



With our modern infrastructure we are able to offer a flexible and reliable service.

Process/Capacity*	Characteristics	Applications
Hard chrome (triplex chrome) Ø up to 500 mm Length up to 2,400 mm Weight up to 2,000 kg	high hardness up to 1,050 HV 0.1, high wear resistance, temperature resistance up to 400°C, corrosion protection (can be improved with multi-layer process), minimum adhesion, low friction coefficient, no distortion of the base material	general industries: die cast, pressure injection, and injection molding tools; drawing, embossing, sinter, and extrusion tools; special parts
Galvanic nickel (matt nickel) Ø up to 900 mm Length up to 3,500 mm Weight up to 3,000 kg	excellent corrosion protection, non.porous ductile matt nickel layer, good mechanical processability, temperature resistance up to 550°C, "repair layer"	printing machine industry: rubber blanket, impression cylinder; foundries: gravity dies; plastics industry: guide rollers; power generation: rotor shafts, heat exchanger plates; engineering: repair of bearings and cones; thermal recycling: high temperature corrosion protection for heat exchangers
Electroless nickel Ø up to 600 mm Length up to 2,500 mm Weight up to 2,000 kg	x-ray amorphous, non-magnetic layer, excellent, ductility, excellent corrosion protection, hardness up to approx. 450 – 500 HV 0.1	textile industry: nozzles, thread guides; engineering: valves, press cylinders, shafts, casting molds; automotive industry: gear wheels, clutches, gear boxes; aeronautics: hydraulics, mandrels
Nickel chrome Ø up to 600 mm Length up to 2,500 mm Weight up to 2,000 kg	combination of the wear resistant chromium layer and the corrosion resistant nickel layer schicht	general industries: feed rolls, aluminum cylinders

* For further information on processes and component sizes on request or www.sti-surface.com

STI Group Factors of Success

Individual Solutions

STI Group offers you individual overall solutions – from comprehensive analyses and consulting, development and innovation to the actual treatment process, mechanical processing, the final quality check and transport.

Industrial Areas

Automotive, Aviation, Defense Technology, Film, Foil, Food, General Industries, Hydraulics, Marine Propulsion, Paper, Power Generation, Print, Textile, Tools etc.

Range of technologies

Hard chrome (including Triplex, structural chrome and Nanochrom), electroless nickel, galvanic nickel, hybrid layers, dispersion layers, thermal spraying (HVOF, plasma, wire flame spraying), dry coating (plasma nitriding, PVD, PACVD), painting, grinding, polishing, milling, turning, boring. Various special processes are available on request.

Quality and Precision

STI Group surface treatments stand for precision, functionality and quality. STI Group guarantees the required process safety to achieve the narrowest tolerance ranges and create tailor-made, reproducible surfaces.

S to XXL Components

STI Group develops innovative, tailor-made surface solutions for components up to 6,000 mm in diameter, 27,000 mm in length and 64 tons weight.

Complex Geometries

One of the core competencies of STI Group is the coating of components with complex geometries. Our freeform surfaces are renowned for their optimized features, the highest level of quality and reproducibility.

Single Parts and Series

STI Group is your specialist for custom-designed surfaces, both for individual parts and series. Our know-how, experience and modern infrastructure are your guarantee of an optimum result.

Research & Development

STI Group carries out systematic application-oriented and pure research and development. Our focus is on high-performance, individually optimized surface solutions for you and your success.

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