



Treatment of Large Components

English

Surface solutions by STI Group





Competence – XXL

Customers from all over the world come to STI Group because of its deepest plating tanks, its largest grinding machines and its leading competence in dealing with large components. Both rotation-symmetric components and those with complex shapes with a diameter of up to 4,500 mm can be coated, ground to a very high precision and polished to a mirror finish.

Largest infrastructure worldwide

The infrastructure of the chrome surfacing plants is laid out for components with dimensions of up to 4,500 mm diameter, 12,000 mm length and a weight of 64,000 kg. The precision grinding workshop can handle components of up to 6,000 mm diameter, 27,000 mm length and a weight of 64,000 kg. STI Group controls each individual process parameter and thereby ensures top quality and precision, even for components with a highly complex geometry. Permanent controls, state-of-the-art coordinate measuring technology and traceable recorded process steps are your guarantee for the consistently high and reproducible quality and characteristics of your customized coating.

All processes from one supplier

STI Group offers a comprehensive service from one port of call, ranging from initial advice through our Technical Sales, to professional mechanical processing, the surface treatment of your components and final quality control, through to support for your transport and customs requirements.

Research & Development

New applications, more exacting specifications and the search for environmentally compatible processes require innovation. STI Group's Research & Development Department is always one step ahead and today is already working on the technology of tomorrow.

Environmental management to ISO 14001

STI Group considers the protection of the environment a key issue. Complying with environmental criteria is a prerequisite for all our processes. 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. As a pioneer in environmental protection, STI Group significantly improves on the minimum legally required limits in some areas.

Expert knowledge and experience

For many years customers from a number of different industries, such as the paper, film, foil and food industries, rely on the high surface quality, the know-how and the flexibility of STI Group.

The surfaces of [heating, cooling and stretch rolls](#) have to meet top requirements regarding [corrosion resistance and anti-adhesion](#) properties. STI Group also offers textured surfaces for these demanding applications.

It is also imperative that [drying cylinders](#) and [conveyor systems](#) are corrosion and wear resistant to ensure an economical and efficient production process. In the food industry and in other industries, additionally optimized surfaces with [excellent non-stick properties](#) are particularly in demand.

One of STI Group's specialities is the [polishing to a mirror finish for cast and calender rolls](#) as well as the grinding of special shapes and grinding under special operating conditions (pressure and temperature). With our specialist polishing processes, we can achieve a roughness of $R_{max} < 0.05 \mu m$. We operate modern CNC-operated equipment for super-fine polishing and superfinishing with belts, stones or emulsions/suspensions.

Processes and applications for XXL components

STI Group is available to you to ensure your success. Together with our experts, you can define the right surface treatment for your specific requirements regarding large components, choosing from a wide range of high-quality surface solutions.



Surface Technologies for Large Components

| Treatments | Wear protection | Corrosion protection | Other advantages | Application Examples |
|-------------------------|-----------------|----------------------|--|--|
| Hard chrome | ++ to +++ | + to +++ | very economical, thickness up to 1 mm, free from pores | casting rolls, roller dryers, calendar rolls, diversion rolls, guide rolls |
| Matt hard chrome | ++ | ++ | customized, reproducible texture, anti-adhesive | cooling rolls, damping distribution rolls |
| Hydrophilic hard-chrome | ++ | +++ | adjustable surface properties for defined fluids transport | coating rolls for producing special papers |
| Galvanic nickel | + | ++++ | excellent mechanical wear characteristics, layers up to 1 mm | spare and replacement parts, plant construction in the chemical industry |

Dispersion layers

| | | | | |
|---------------------------|------|-----|-------------------------|---------------------------------|
| Chrome ceramic dispersion | ++++ | +++ | high thermal resistance | drill rods, heavy duty bearings |
|---------------------------|------|-----|-------------------------|---------------------------------|

Combined layers

| | | | | |
|-------------------------------|-----|------|--|---|
| Galvanic nickel / hard chrome | +++ | ++++ | galvanic nickel layers up to 1 mm | re-coating and repair of cast iron rollers, seawater environments |
| Hartchrom/PTFE | +++ | +++ | high anti-adhesion effect, low coefficient of friction | roller dryers for the food and paper industries |
| Nanochrom | + | +++ | high anti-adhesion effect, very good cleaning properties | cooling rolls for the foil industry |

Thermal spray coatings (selection)

| | | | | |
|--|------|---------------------|--|--|
| WC-Co-Cr HVOF process | ++++ | + | erosion and abrasion protection, especially in aqueous solutions, good adhesive strength | calenders, drying cylinders, diversion and guide rolls, piston rods, components for water turbines |
| Cr ₂ O ₃ (chromoxide) plasma spray process | ++++ | ++++ (with sealing) | highly chemically resistant to all pH values, high electrical resistance | ceramic layers, seal seats and shaft protection bushes |
| Molybdenum, wire flame spray process | ++ | + | high adhesive strength, excellent sliding friction properties | rolls for the paper industry, piston rods for large diesel engines |

Capacity

Plating up to Ø 4,500 mm, length up to 12,000 mm, weight up to 64,000 kg; **Thermal Spraying** up to Ø 4,500 mm, length up to 8,000 mm, weight up to 15,000 kg; **Grinding** up to Ø 6,000 mm, length up to 27,000 mm, weight up to 64,000 kg
Further treatments and component dimensions on request or www.sti-surface.com

0 = adequate + = satisfactory ++ = good +++ = very good ++++ excellent

STI Group Surface solutions worldwide.

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 & Powertrain, 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. STI freeform surfaces are renowned for their optimized characteristics, 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. Know-how, experience and modern infrastructure guarantee optimum results. |
| 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. |

www.sti-surface.com



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