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SINTER SURFACE SOLUTIONS

The first comprehensive solution for sinter products



Sinter Surface Solutions was awarded silver as the „surface 2012“ by the Fraunhofer IPA Institute for production technology and automation.



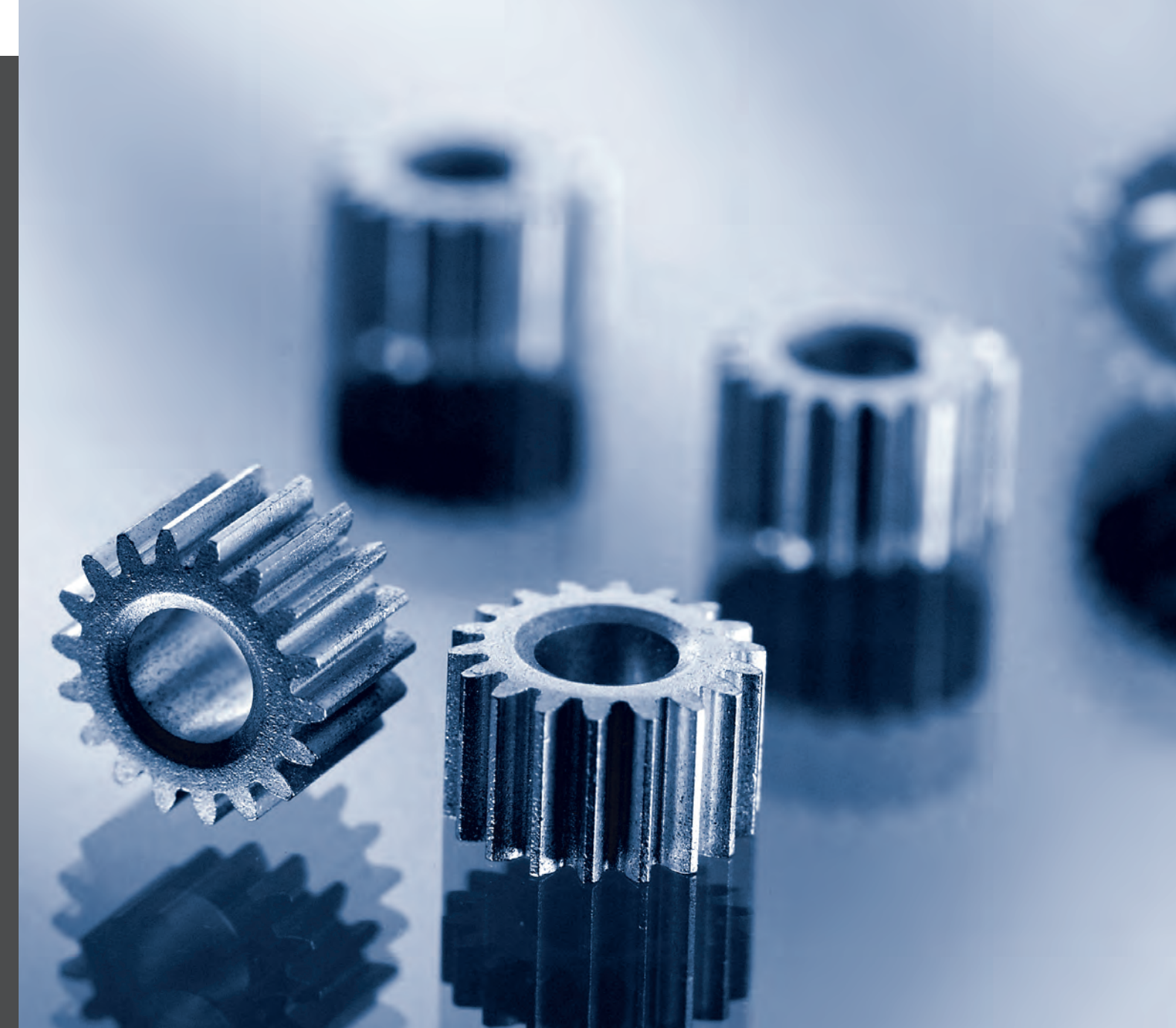
SINTER SURFACE SOLUTIONS: Impregnating and refining all from one source.

System solutions are indispensable for meeting today's quality, reliability and profitability requirements. **Holzapfel Group** - your specialist for surface finishing - offers **SINTER SURFACE SOLUTIONS**, an innovative comprehensive answer to treating your demanding sinter products, such as those found in the automobile supplier industry, for instance. This Holzapfel invention is the first treatment in Europe which combines the processes of both sealing and coating. The result is a highly effective impregnation of the sinter metal, which - together with the refinement - boasts a permanent, sustainable surface for your building parts. Bloomings (Bleed outs) are a thing of the past, thanks to **Holzapfel Group's SINTER SURFACE SOLUTIONS**.

SINTER SURFACE SOLUTIONS make it possible to attune treatments perfectly to your sinter source substances of nearly all alloys on the basis of iron materials as well as non-ferrous metals. **Holzapfel** offers **SINTER SURFACE SOLUTIONS** with corrosion-protective surface coatings such as zinc or zinc alloy systems. Or you can also choose decorative coatings, such as copper-nickel-chrome, or several other refinement processes. Other post-steps like sealing and barrel finishing complete the offer. We are happy to help you find the right solution to your surface finishing needs. We are looking forward to your contacting us.

Our unique combination of special impregnation and coating boasts clear benefits to you:

- We promise **performance**: You can rest assured that our process averts bleed out effects as well as impurities on your building parts. The impregnated parts have a positive effect on subsequent mechanical treatment steps: tools and machinery that process the impregnated parts benefit from a longer service life.
- We promise **speed**: Impregnating and coating both are executed at one central location. This means time and cost savings through less logistics for you.
- We promise **expertise**: **Holzapfel Group** is your competent partner with many years of experience in the automotive industry as well as surface impregnation and refinement. Let us take part in your project planning phase, and you will see that joint implementation processes will get you to your goal faster.
- We promise **reliability**: The combination of impregnation and coating results in better end products. With **SINTER SURFACE SOLUTIONS** both treatments steps are perfectly attuned to each other as well as to your source material.
- We promise **service**: Your Holzapfel point-of-contact will be available for all questions you may have about the treatment of your sinter products or about all related value-added processes.



Demanding products deserve innovative treatments.

Sinter metal parts possess a porous structure. A coating is only feasible if the pores close to the surface of the part are completely sealed. Only then it is possible to avoid liquids to seep into the material during the coating process.

SINTER SURFACE SOLUTIONS answer this problem with a chemical, highly resistant, synthetic resin specially tailored towards sinter metals. The dreaded leakage of fluids from the component after processing - the so-

called bleed out effect - is thus avoided indefinitely. This cannot be achieved with conventional impregnation systems, which are usually made to seal off castings.

After the impregnation process has been completed, the completely sealed and cured part moves on to the usual coating process, benefiting from the **Holzapfel Group** quality that we are long known for.

More than you could wish for.

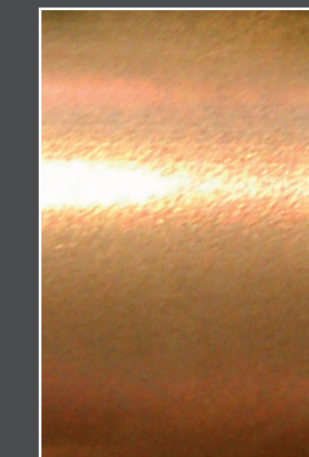
Your to-be-treated material is touched by a lot of hands. Every supplier does his own part to make the process cumbersome or successful. Even better if one of your suppliers can take over several steps in the chain to be completed in one location. Pull us in early into the process, because impregnating and refining your products via our **SINTER SURFACE SOLUTIONS** is only a small part of what **Holzapfel Group** can do for you. We promise added-value: We assemble, transport, and manage all of your structural components with the help of integrative production technology. We do all of this without ever losing sight of the goal: to be most economical and efficient on your behalf. And to top it off, we provide you with guaranteed and dependable delivery, which enables you to plan your next steps in the chain most reliably.

Follow the lead of many other organizations in your industry and let **Holzapfel Group's SINTER SURFACE SOLUTIONS** surprise you.

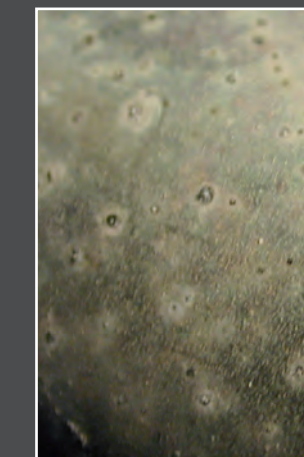
You can find **SINTER SURFACE SOLUTIONS** in many areas of application; see for yourself:

Surface protection for sinter metal parts:

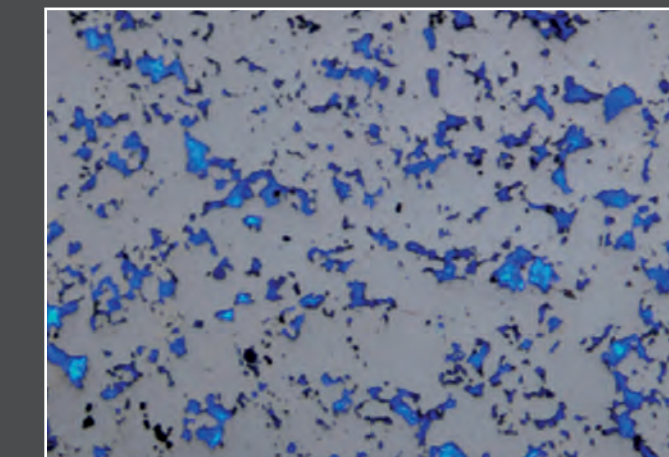
- Any place where special corrosion protection is needed, for instance in gear parts (e.g. rings, hubs, clutch parts), in the engine compartment (e.g. gear wheels, bearing caps, chain wheels) or in the steering system (e.g. pistons) as well as in many other areas.
- Any place where wear protection is of importance, for instance for building parts in pumping systems, for hydraulic elements or bearings.
- Any place where decorative appearance of the surface is an additional desired outcome, for instance in the interior of ignition locks or small iron-works.



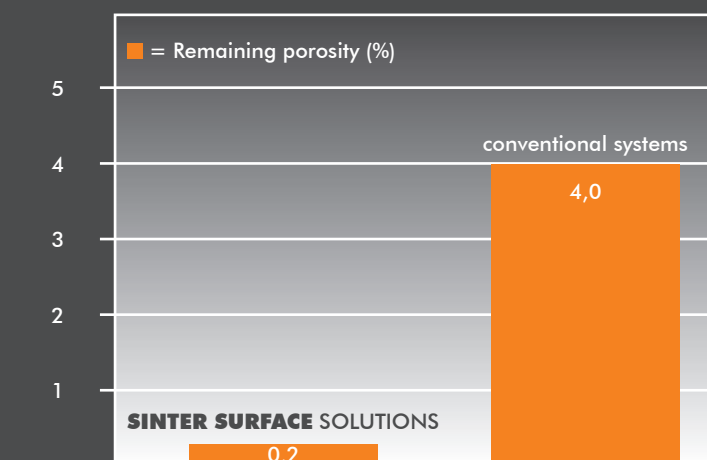
SINTER SURFACE SOLUTIONS: surface quality you can expect from Holzapfel



Bleed out is now a thing of the past



Photomicrograph of the SSS-impregnated surface under UV-lighting



Very low remaining porosity as well as a narrow rim is achieved through perfectly attuned processes.

