



ROLLER COVERING FOR THE METAL INDUSTRY

ANNEALING FURNACE ROLLERS

In order to produce the steel grades needed for today's car, packaging and building industry, most cold rolling mills and galvanizing lines are equipped with continuous annealing furnaces.

Ductility and hardness changes can be created in the steel strip by heating it above its recrystallization temperature and then cooling it down in a controlled way. Both in horizontal as in vertical annealing furnaces, rollers are used to transport the strip through every section. These rollers are generally made out of refractory steel and are submitted to scratching, wear and pick-up of metal particles. Furthermore, the surface roughness needed to assure a good grip on the steel strip, gets lost in time.

Hannecard proposes carbide coatings with extreme durability for every position of the annealing furnace (up to 950 °C). Not only the lifetime is extended, also functionality and stability are maintained much longer, improving the quality of the strip and reducing cost and downtime.

Hannecard uses the unique HVAF spray technology to increase the quality of the carbide.



Our covering solution for annealing surface rollers: HanneSpray

Hannecard offers 2 specific HVAF thermal spray coatings:

- **High quality chromium carbides**
- **High quality tungsten carbides**

All our solutions are available in a 'Standard' version or a 'Plus' version. The 'Plus' version is optimized to obtain a higher hardness and a better resistance to corrosion and abrasion.

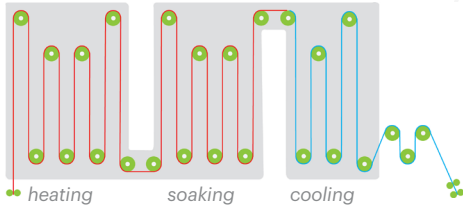
OUR ADVANTAGES

- Extreme high hardness and abrasion resistance
- Surface roughness (Ra) possible from 0,05 µm to 10 µm
- Cylindrical, crowned, tapered and double tapered finishing
- No dimensional limitations
- Repair of damaged surfaces
- On-site inspection of the furnace rollers

Type	Solution	Characteristics	Application
Chromium carbide	HanneSpray-Cr	<ul style="list-style-type: none"> • As-sprayed roughness (Ra) 5-7 µm* • Hardness up to 900 HV • High corrosion resistance • Temperature resistance max 950 °C 	<ul style="list-style-type: none"> • Conveyor, deflector, detour and pinch rollers • All furnace sections
Chromium carbide	HanneSpray-Cr Plus	<ul style="list-style-type: none"> • Natural roughness (Ra) 2-4 µm* • Hardness up to 1100 HV • Very high corrosion resistance • Improved abrasion resistance • Temperature resistance max 950 °C 	<ul style="list-style-type: none"> • Conveyor, deflector, detour and pinch rollers • All furnace sections
Tungsten carbide	HanneSpray-W	<ul style="list-style-type: none"> • Natural roughness (Ra) 5-7 µm* • Hardness up to 1100 HV • Very high abrasion resistance • Temperature resistance max 500 °C 	<ul style="list-style-type: none"> • Bridle, deflector, detour and pinch rollers outside the furnace • Furnace entry and exit
Tungsten Carbide	HanneSpray-W Plus	<ul style="list-style-type: none"> • Natural roughness (Ra) 2-4 µm* • Hardness up to 1300 HV • Extreme abrasion resistance • Temperature resistance max 500 °C 	<ul style="list-style-type: none"> • Bridle, deflector, detour and pinch rollers outside the furnace • Furnace entry and exit

*Roughness can be increased thanks to special treatment to max. 10 µm

Example of a vertical annealing furnace



Our HanneSpray benefits

HVAF coatings are very dense, tough and show compressive residual stresses, which enable much thicker coatings to be applied.

Compared to hard chrome, the advantages of our coatings are:

- Abrasion resistance up to 10 times better than hard chrome
- No hydrogen embrittlement
- Higher hardness (maximum 900 HV for hard chrome)
- Better corrosion resistance
- Ability to apply heavy thicknesses
- Possibility of high roughness
- No use of Cr6 + (carcinogenic product used in manufacturing of hard chrome)
- Food certification possible (Hannespray Cr Plus and Carburflon NG)
- Possibility to apply an anti-adherent finish

ROLLERS FOR WATER QUENCHING

As final part of the cool down operation, water quenching can lead to steel grades with higher hardness.

Squeegee rollers are used to remove the rest water of the strip.

Hannecard proposes high end rubber and polyurethane covers that insure excellent lifetime and superior squeegee quality, but also react well to temperature peeks and to dry nip situations due to the rapidly evaporating water.

Our covering solutions for squeegee rollers

Type	Solution	Characteristics
High-end rubber	ClearSqueeze-XPE Blue 60, 70 and 80 Shore A	<ul style="list-style-type: none"> • Excellent squeegee behaviour and efficiency, low energy use • Excellent lifetime • Temperature resistance up to 140 °C
High-end rubber	SmartSqueeze Grey 60, 70 and 80 Shore A	<ul style="list-style-type: none"> • Improved resistance to abrasion, tear and edge cutting • Improved resistance to high shear and load • Excellent lifetime • Temperature resistance up to 130 °C
High-end polyurethane	Hannethane-XP Brown 70, 80 and 90 Shore A	<ul style="list-style-type: none"> • Extreme resistance to abrasion, tear and edge cutting • Very good resistance to high shear and load • Excellent squeegee dynamics • Outstanding lifetime • Temperature resistance up to 100 °C
High temperature polyurethane	Hannetherm-XP Brown 80 and 90 Shore A	<ul style="list-style-type: none"> • Extreme resistance to abrasion, tear and edge cutting • Very good resistance to high shear and load • Excellent squeegee dynamics • Outstanding lifetime • Temperature resistance up to 140 °C

MORE INFORMATION?

For more information, please contact your local Hannecard partner or visit our website at:

www.hannecard.com