

## Coating Service Solutions Metco STEEL

### Coating systems for the steel industry

#### The situation

In the production and processing of steel, great demands are made on the surfaces of rollers, as they have a direct influence on the quality of the product produced. In operation, these rollers are subjected to various types of hazardous conditions.

For example:

- In continuous strip galvanizing lines, the liquid zinc attacks the rolls submerged in the galvanizing bath.
- Hearth rolls, which see temperatures up to 1100 °C (2000 °F), react with the furnace atmosphere. In addition, heavy wear is caused by adhesion and abrasion. Another major problem is that slag and scale can stick to the rolls.
- Apron, table, deflector and anvil rollers are subjected to high thermal and mechanical stresses.

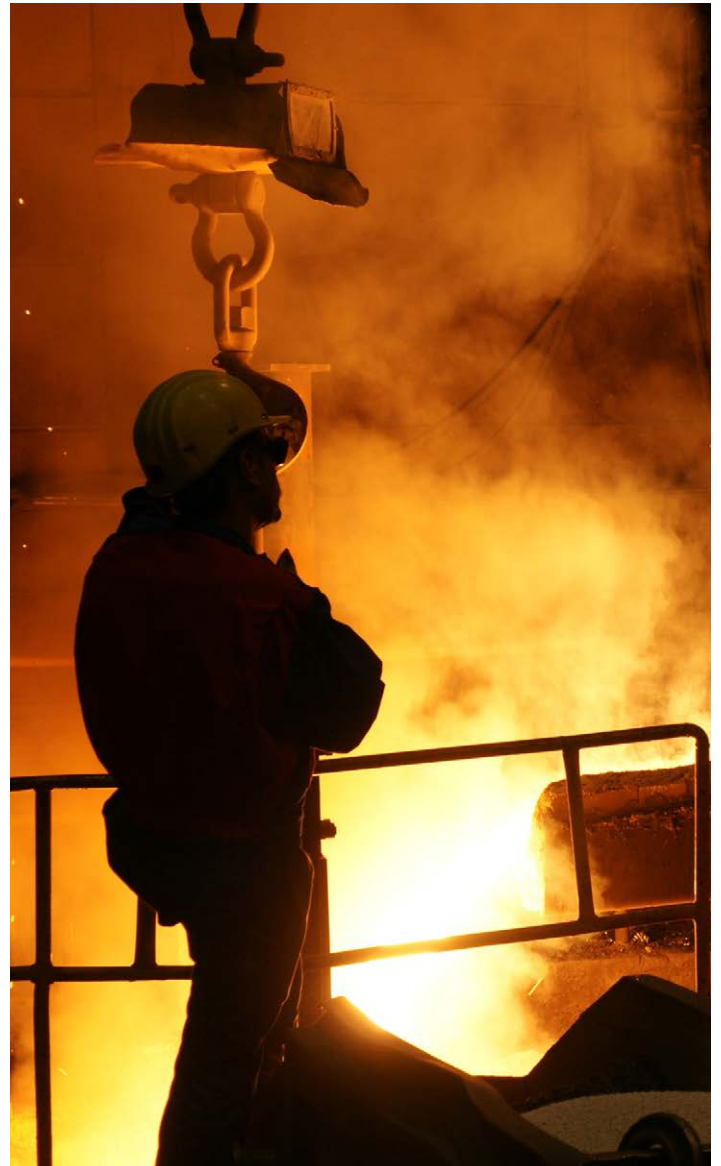
#### Our solution

Metco™ STEEL are customized coating systems developed by Oerlikon Metco, for steel manufacturing applications that are now used by leading steel companies.

Coatings exhibiting optimum properties can be produced by simultaneously applying different materials. For example oxides ( $Al_2O_3$ ,  $ZrO_2$ ) or carbides ( $WC$ ,  $Cr_3C_2$ ) together with a high temperature resistant nickel or cobalt alloy. Sealing as a post-coat treatment may be suitable to impart additional beneficial characteristics to thermally sprayed coatings. NiCrBSi coatings can be fusion-bonded and have properties and hardness similar to a hard welded overlay deposits. These coatings are chosen for applications where very high adhesive strength is needed.

#### Customer benefits

- Consistent high steel quality level
- Cost reduction in overall roll cost
- Constant R&D
- Suitability of Metco STEEL for future demands
- Coatings process under ISO 9001 standards
- Operators certified by GTS





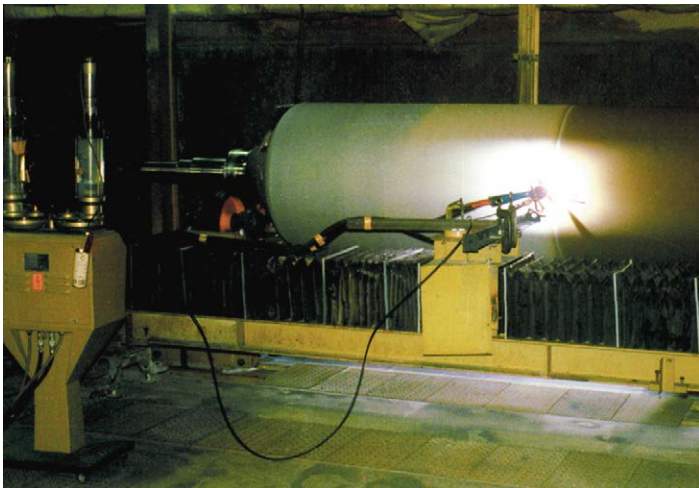
Coating a sink roll using a high-velocity oxy-fuel (HVOF) spray

Metco STEEL SR for sink rolls used in continuous galvanizing lines:

- WC/Co coating, produced by high velocity oxy fuel (HVOF) spray, and subsequently sealed
- Poor wettability by zinc and zinc-aluminium melts
- Low adhesive properties with respect to zinc and iron-zinc alloys
- No formation of brittle intermetallic phases
- High wear resistance

Metco STEEL AL for rolls used in continuous aluminum galvanizing lines:

- Duplex WC/Co ceramic coating, produced by high velocity oxy fuel (HVOF) and plasma spray, and subsequently sealed
- Poor wettability by aluminum melts
- Adequately corrosion resistant to aluminum melts
- Wear resistant



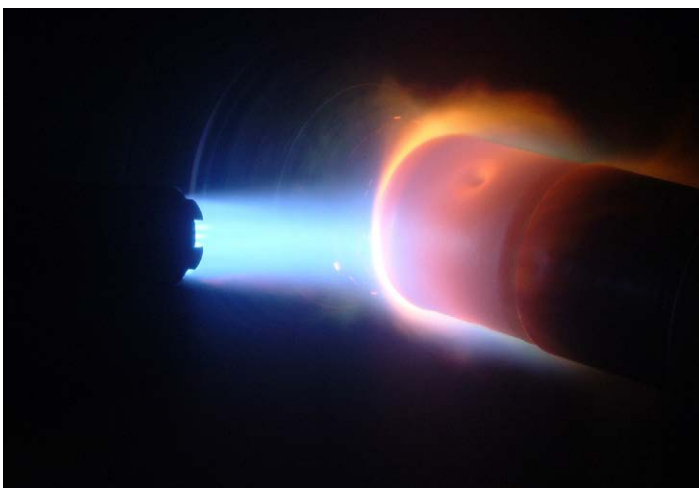
Coating of a hearth roll using plasma spray

Metco STEEL HR for hearth rolls:

- Oxide-strengthened MCrAlY coating, produced by plasma spray, and subsequently sealed
- High hardness and wear resistance
- Heat and thermal shock resistant
- Suitable for furnace atmospheres, usually nitrogen or hydrogen, up to 1100 °C (2000 °F)

Metco STEEL RG for table rolls:

- Fusion-bonded NiCrBSi coating
- Highly impact resistant due to diffusion bonding
- Corrosion and high wear resistance
- Hardness: Up to HRC 60, which can be varied according to application



A NiCrBSi coating undergoing fusion bonding



Information is subject to change without prior notice.