Welding Alloys

Steel Industry Solutions

Wear protection across steel plants

For Welding **Professionals**

Contents

Our company

Welding Alloys is a global leader in the production of advanced welding consumables and automated welding equipment for hardfacing, cladding, joining and repair.

We also offer industry-leading engineered wear services in our workshops or in situ, as well as a wide range of wear plates, pipes and components.

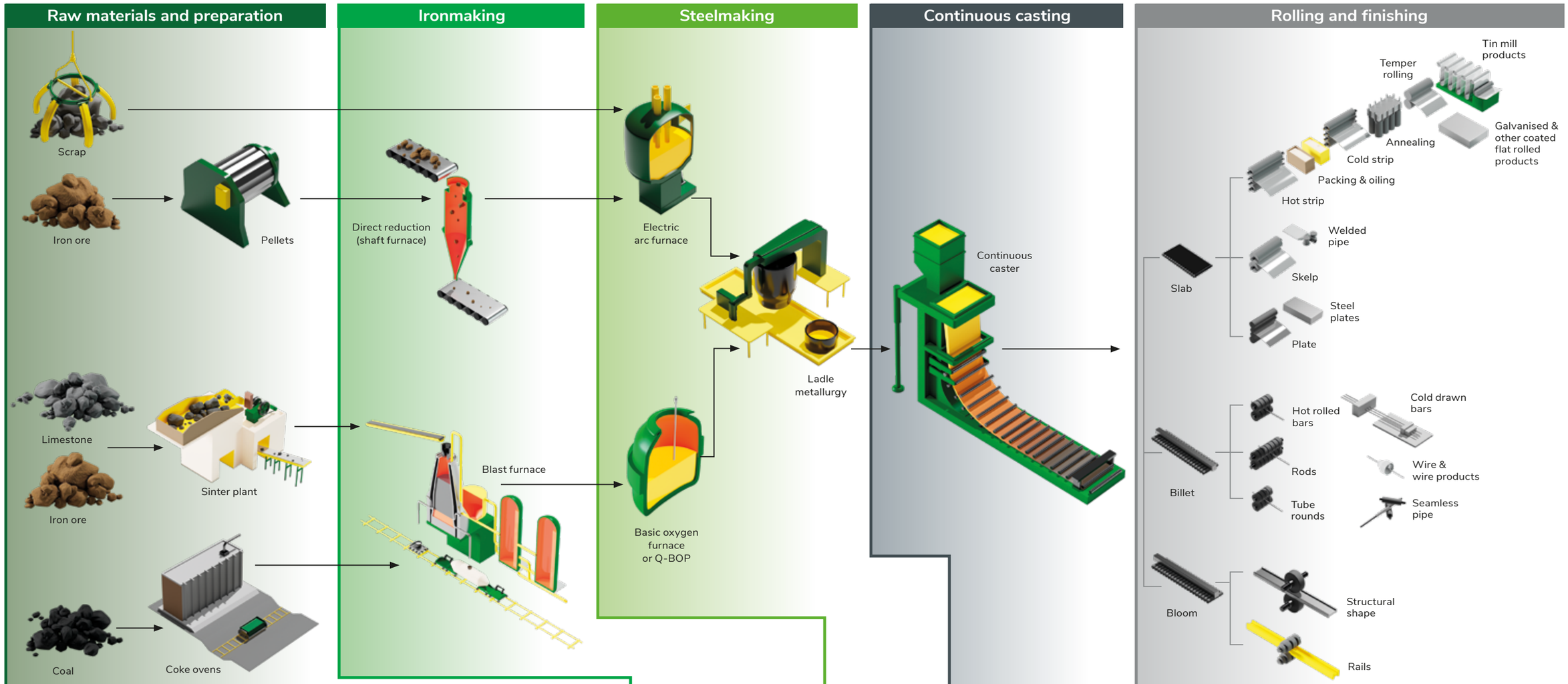
Our customer promises define the standard of reliability, expertise and partnership that customers can expect from Welding Alloys. They reflect what matters most and guide how we deliver value in every interaction.

- **Supply you can count on:** Customers rely on us to deliver the right product or solution, at the right time, with the right quality, so their operations run without disruption.
- **Technical expertise that really works:** We provide solutions that perform in real operating conditions and deliver measurable value.
- **Your partner for the long run:** Since 1966, we value the long-term relationships we build through trust, consistency, and ongoing support.

For several decades, the Welding Alloys name has been synonymous with excellence in research and development (R&D), resulting in a steady stream of innovative products and advanced technical solutions and services.

Welding Alloys is a participating member of the United Nations Global Compact and supports all principles relating to the environment, labour, human rights, and anti-corruption. As part of our continued commitment towards sustainability, we continue to improve our products and processes in order to reduce the negative impact on both the welder and the environment.

Steel production applications



Grabs

Our Integra™ teams can increase the lifetime of high wear components such as grabs using a combination of Welding Alloys cored wires, composite wear plates and advanced materials.

Crushers

Welding Alloys developed a specific range of cored wires to optimise crusher performance, reduce maintenance costs and total cost of ownership (TCO).

Coke ovens

Welding Alloys offers a range of solutions to improve performance in the coke oven area of the plant including cladding and hardfacing of components subject to wear.

Sinter crushers

Our 3D-Carb™ technology is specially engineered to extend the service life of crucial parts subject to extreme wear and high temperatures, such as sinter crushers.

Grizzly bars

Grizzly bars suffer from heavy impact and abrasion. Our Integra™ service teams restore and protect them using advanced hardfacing consumables and automated welding solutions.

Blast furnace

Our Integra™ teams use wear plates and cored wires to improve the wear resistance of blast furnace parts such as top charging chutes or splitter chutes, bells, bell seats and hopper seats.

BOF off-gas hood

Using our SprayClad® solution, we can refurbish BOF off-gas hood tubes, improving resistance to high temperatures, thermal fatigue and oxidation.

Secondary cooling nozzles

Our Integra™ teams supply and refurbish secondary cooling nozzles to help maintain stable spray performance and strand integrity through the caster.

Continuous casting rolls

We manufacture and repair continuous casting rolls, using dedicated cored wires to improve wear resistance.

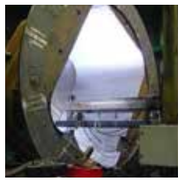
Dummy bar heads

Our service teams provide cost-effective refurbishing and hardfacing of dummy bar heads used in the continuous casting process.

Rolling and finishing rolls

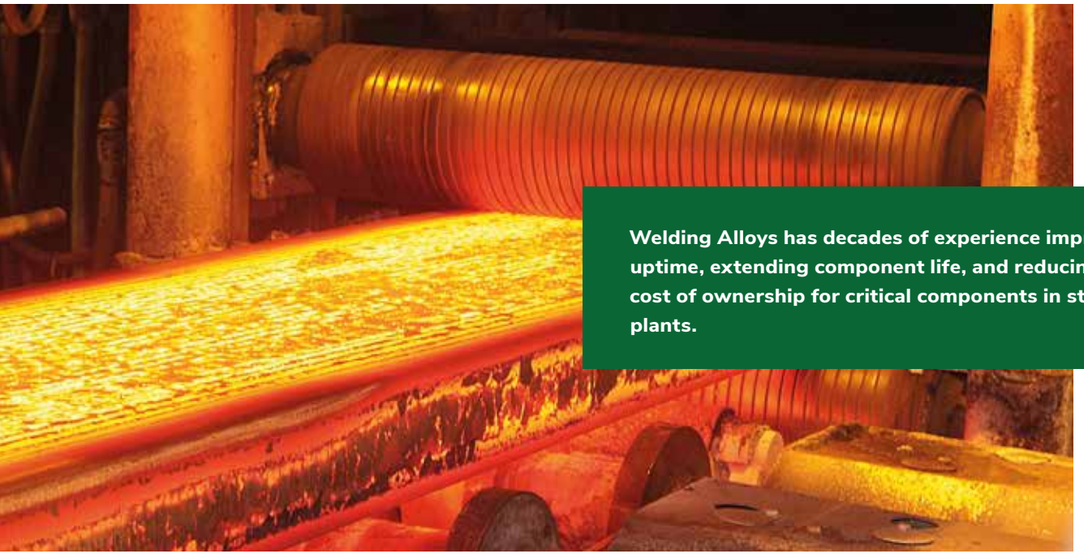
Our Integra™ teams refurbish rolling and finishing rolls using our specially developed cored wires, improving wear resistance and extending service life.

Zinc pots



We have developed GALVALLOY, a reliable and controllable cored wire solution specifically designed for corrosion resistance and the galvanising environment.

Welding Alloys and steel making: our integrated offer



Welding Alloys has decades of experience improving uptime, extending component life, and reducing total cost of ownership for critical components in steel plants.

Welding Alloys supports the steel industry with proven welding consumables, wear protection solutions, and on-site or in-house wear services (Integra™) across critical areas such as sinter plants, continuous casting lines, and rolling mills. Our solutions improve uptime, extend component life, and reduce maintenance costs, supported by technical expertise worldwide.

Our Integra™ service teams work closely with customers, analysing wear problems and carrying out repairs or rebuilds during planned shutdowns. Using Welding Alloys' own consumables and automated welding equipment, we deliver tailored wear solutions that maximise plant efficiency.

Alongside an extensive range of hardfacing and cladding consumables and automated welding machines dedicated to steel applications, we also manufacture prefabricated wear plates, pipes, and liners that integrate easily into plant layouts.

To complement this offer, through Dalforsån - part of the Welding Alloys Group - we supply complete roller assemblies including cladded rolls, jackets, and axles, fully machined, heat treated, and ready for installation. Whether restoring worn parts or delivering complete assemblies, Welding Alloys provides long-term reliability and performance for steel making operations.

Engineered wear solutions

Our Integra™ service teams operate globally, working with steel plants to repair, rebuild, and protect equipment across every stage of the steel making process. From raw material handling to finishing operations, we assess wear patterns and deliver durable, cost-effective solutions on site or in our workshops.

Whilst the following pages highlight some of our wear protection solutions, we can assess and address wear in any area of the steel plant, providing tailored solutions to match specific operational needs.

We support our customers in understanding their challenges, delivering on-site or in-house engineered wear services for complex steel making applications.

Solutions for sinter crushers
3D-Carb™ is a specially developed welding process designed to reinforce specific high-wear zones on sinter breaker components, including rotor discs and teeth.

The deposit pattern is adapted to the wear profile of each component, helping restore geometry and protect areas exposed to repeated impact, high temperatures, and abrasion.

By helping maintain component geometry and improve wear resistance, 3D-Carb™ can contribute to longer uninterrupted production periods.

Performance in service
In operation, this approach has extended the service life of components by up to three to four times, with consistent results across multiple service campaigns. The result is longer service intervals, reduced maintenance, and lower total cost of ownership.

Solutions for zinc pots
GALVALLOY is a solution used by our Integra™ service teams for cladding zinc pots used in continuous galvanising lines. It provides excellent resistance to corrosion, oxidation, and thermal fatigue, protecting the pot walls from attack by molten zinc.

This solution extends pot service life, reduces the frequency of relining or replacement, and ensures stable operation across extended production campaigns.

Performance in service
In service, GALVALLOY has shown excellent resistance to zinc corrosion and intermetallic attack, maintaining pot integrity over long operating periods. Its consistent performance reduces the need for pot repairs and extends the continuous operating time.

Solutions for handling equipment
Welding Alloys provides hardfacing and rebuilding solutions for material handling and process equipment exposed to wear. Using our know-how, proven welding procedures and high alloy cored wires, we rebuild worn surfaces and apply weld overlays, including internal diameter weld overlay on pipes and elbows where internal wear is critical.

Typical applications include chutes and hoppers, screw conveyors, fan blades, ducts and scrap handling grabs. Our repairs restore geometry and protect high wear zones to extend service life.

Performance in service
Hardfacing alloys are matched to the wear mechanism and applied where they are needed most, from abrasion and impact on scrap handling grabs, transfer points and screw flights to particle erosion in fans, ducting, pipes and elbows. Repair of these components protects exposed wear surfaces and flow paths. Service life is extended, unplanned downtime is reduced and total maintenance costs are lowered.

Solutions for secondary cooling nozzles
We supply high-quality air mist and water-only secondary cooling nozzles, along with a comprehensive refurbishment service for used nozzles to return them to optimal performance.

Used nozzles undergo a thorough, non-aggressive cleaning process. Each nozzle is then carefully inspected for spray pattern accuracy and overall condition. Any units that fall outside specification are rejected to ensure consistent performance and reliability.

Serviceable nozzles are treated with a specialised coating designed to reduce wear and minimise the risk of blockage. New nozzles are also available with the same advanced coating for enhanced durability.

All coated nozzles are delivered back to site ready for immediate installation, helping to reduce downtime and maintain efficient operation.

Performance in service
Consistent spray performance supports stable secondary cooling and strand integrity, reducing the risk of undercooling and unplanned downtime. Refurbishment extends nozzle service life and supports more predictable maintenance planning.

Solutions for rolling and finishing rolls
Rolling and finishing rolls are used to reduce and shape steel after casting, from roughing through to final sizing. This includes work rolls and backup rolls in flat product mills and grooved rolls for long products and sections. These rolls operate under high contact stresses and cyclic loading so wear, rolling contact fatigue (spalling) and loss of profile or groove geometry are common.

Using our hardfacing and cladding cored wires and automated welding equipment, we rebuild worn surfaces to restore geometry, maintain dimensional control and achieve the required surface finish.

Performance in service
Where roll bodies and journals remain within repairable limits, refurbishment is typically faster and more cost-effective than purchasing new rolls. This supports higher mill availability through planned roll changes and reduces the risk of unplanned downtime.

Repaired rolls provide stable dimensions throughout their service life, ensuring consistent product quality and extended operating performance.

Solutions for continuous casting rolls
Continuous casting rolls include foot rolls at the mould exit, strand guide segment rolls, including bending zone rolls, as well as withdrawal and straightening rolls.

These rolls operate under demanding conditions, including thermal cycling, exposure to spray water and scale. Oxidation and corrosion are most prevalent in the upper segments, while higher contact stresses in the withdrawal and straightening zones lead to wear, rolling contact fatigue (spalling), and surface cracking.

Using our dedicated range of welding consumables and qualified procedures, we apply position-specific weld overlays with carefully controlled heat input and dilution. Rolls are then machined and thoroughly inspected to restore original geometry and surface condition.

Performance in service
Refurbished rolls are restored to the specified diameter, ensuring accurate geometry and consistent performance in service. This also restores the correct profile and surface condition, helping to maintain stable strand guidance, alignment and precise roll gap control throughout the segments.

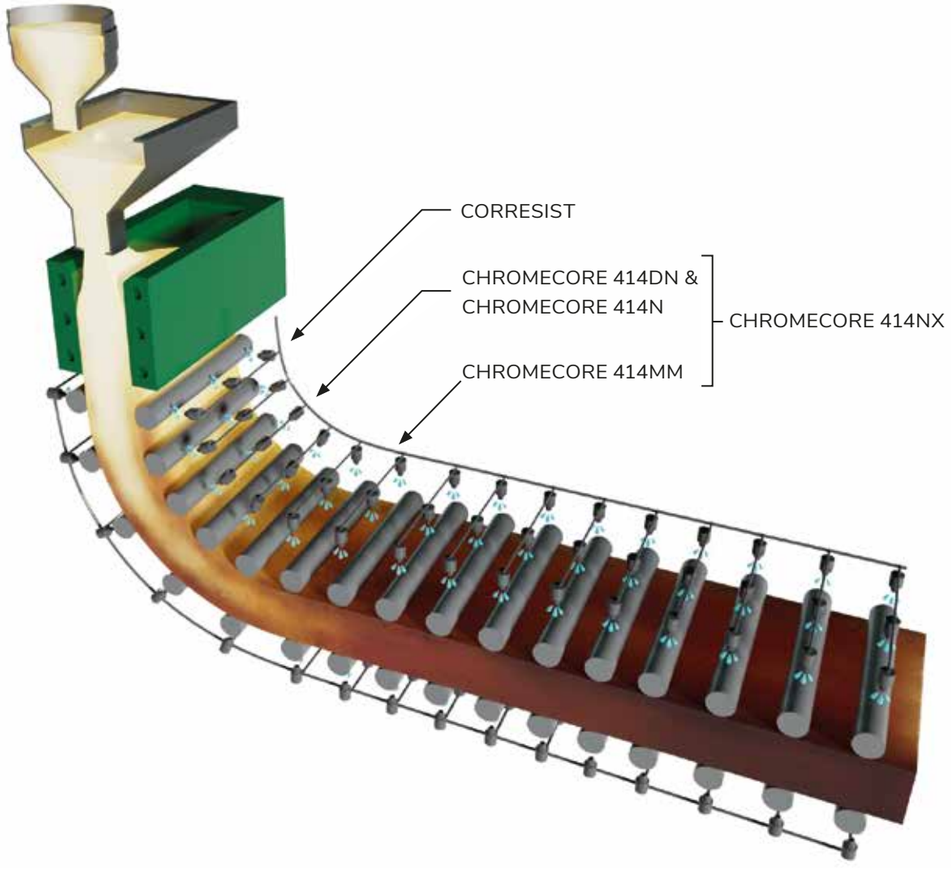
Position-specific weld overlays enhance resistance to oxidation and corrosion in upper segments, while improving resistance to wear and rolling contact fatigue (spalling) in lower segments. The result is extended service life between roll changes and a reduction in unplanned roll-related stoppages.

Welding consumables

Welding Alloys manufactures a range of cored wires for every roll position in continuous casting lines. From the high-temperature areas below the mould to the lower segments and run-out zone, these consumables provide protection against temperature, corrosion and mechanical wear. The diagram below illustrates typical product applications along the casting line.

When surfacing low or medium alloyed steels with martensitic stainless consumables, a buffer layer with approximately 17% Cr is recommended to maintain metallurgical integrity and prevent cracking in service.

Our technical experts support customers in selecting the most suitable solution for each operating environment, helping to minimise wear and improve part performance. More detailed product information can be found in the table on the following page.



Ferritic, martensitic and austenitic stainless steels

Product	Composition [%] - Fe balance											Hardness 3 layers as welded
	C	Mn	Si	Cr	Ni	Mo	W	V	Co	N	Other	
CHROMECORE 430	0.05	1	0.8	17.5								220 HB
CHROMECORE 434N	0.05	1.2	0.7	17	3.2	0.5				0.08		35 - 40 HRC
CHROMECORE 434DN	0.05	1.2	0.8	16.5	3.5	0.5	0.8	0.5	2	0.08		38 - 42 HRC
CHROMECORE 410	0.08	1.2	0.8	12.5								40 - 43 HRC
CHROMECORE 420	0.3	1	0.6	13								48 - 52 HRC
CHROMECORE 414	0.05	1.2	1	13.5	4	0.5						38 - 43 HRC
CHROMECORE 414MM	0.15	1.2	0.5	12.5	2.3	1.2		0.20				43 - 47 HRC
CHROMECORE 414N	0.08	1	1	13.5	4.3	0.7				0.09		40 - 45 HRC
CHROMECORE 414DN	0.05	1.2	0.8	13.5	4.5	0.5	0.8	0.5	2	0.07		40 - 45 HRC
CHROMECORE 414NX	0.1	1.1	0.5	13.5	3.2	1.3		0.15		0.09	REE*	42 - 48 HRC
CHROMECORE 414COILER	0.3	1	0.7	12	1.3	0.6	0.3					50 - 55 HRC
CORRESIST	0.04	1.4	0.7	20	12	4					+	

The technical datasheets for these products are available on our website.
The safety datasheets are also available on request.

*Rare Earth Elements

Ferritic, martensitic and austenitic stainless steels selection guide

Product	Welding process	Standard diameters [mm]	EN 14700 standard	Metal-to-metal friction	Mineral abrasion	Abrasion under pressure	Hot abrasion	Erosion	Cavitation	Impact	Mechanical fatigue	Thermal fatigue	Hot oxidation	Corrosion	Cutting	Work hardening	Machining	Description and applications
CHROMECORE 430	-O	1.6 - 3.2	T Fe7	◆◆					◆		◆◆	◆◆	◆	◆			◆◆	Alloy depositing a 17% chromium ferritic stainless steel. Combined resistance to corrosion, frictional wear and temperature. Resistant to seawater and dilute organic acids. The addition of nitrogen or even vanadium, tungsten and cobalt will increase wear performance. **Applications:** continuous casting rolls, hot-rolling mills.
	-G	1.2 - 2.4																
	-S	2.4 - 3.2																
CHROMECORE 434N	-O	1.6 - 3.2	T Fe7	◆◆					◆		◆◆	◆◆	◆	◆			◆◆	
	-S	2.4 - 3.2																
CHROMECORE 434DN	-O	1.6 - 3.2	T Z Fe7	◆◆					◆		◆◆	◆◆	◆	◆			◆◆	
	-S	2.4 - 3.2																
CHROMECORE 410	-O	1.6 - 3.2	T Fe7	◆◆				◆	◆	◆	◆◆	◆◆	◆	◆			◆	Alloy depositing a 13% chromium martensitic stainless steel. Resistant to wear from friction, erosion, corrosion and thermal fatigue. Can be polished. **Applications:** continuous casting rolls.
	-G	1.2 - 2.4																
	-S	2.4 - 3.2																
CHROMECORE 420	-O	1.6 - 2.8	T Fe8	◆◆				◆			◆◆	◆◆	◆	◆			◆	Hard martensitic stainless steel with 13% chromium and high carbon content. Resists frictional wear. **Applications:** rolling mill guides.
	-G	1.2 - 2.4																
	-S	2.4 - 3.2																
CHROMECORE 414	-O	1.6 - 3.2	T Fe7	◆◆				◆	◆	◆	◆◆	◆◆	◆	◆			◆◆	Alloy depositing a 13% chromium ferritic-martensitic stainless steel. CHROMECORE 414MM - addition of nickel and molybdenum. Homogeneous deposit structure with controlled ferrite content. Designed to resist metal-to-metal wear, corrosion, friction and thermal fatigue. The addition of nitrogen or even vanadium, tungsten and cobalt will increase wear performance. **Applications:** continuous casting rolls, hot-rolling mills.
	-G	1.2 - 2.4																
	-S	2.4 - 3.2																
CHROMECORE 414MM	-G	1.2 - 2.4	T Fe7	◆◆				◆	◆	◆	◆◆	◆◆	◆	◆			◆	
	-S	2.4 - 3.2																
CHROMECORE 414N	-O	1.2 - 2.8	T Z Fe7	◆◆				◆	◆	◆	◆◆	◆◆	◆	◆			◆◆	
	-S	2.4 - 3.2																
CHROMECORE 414DN	-O	1.2 - 2.8	T Z Fe7	◆◆				◆	◆	◆	◆◆	◆◆	◆	◆◆			◆◆	
	-S	2.4 - 3.2																
CHROMECORE 414NX	-O	1.6 - 3.2	T Z Fe7	◆◆				◆	◆	◆	◆◆	◆◆	◆	◆◆			◆◆	Nitrogen-alloyed 414 martensitic stainless steel, strengthened with niobium, vanadium and rare earth elements for resistance to tempering, creep, oxidation and corrosion. The addition of rare earth elements improves resistance to corrosion as well as mechanical properties. **Applications:** continuous casting rolls, hot-rolling mills.
	-G	1.2 - 2.4																
	-S	2.4 - 3.2																
CHROMECORE 414COILER	-S	2.4 - 3.2	T Z Fe7	◆◆				◆	◆	◆	◆◆	◆◆	◆	◆			◆	Alloy depositing a 13% chromium ferritic-martensitic stainless steel with the addition of nickel and molybdenum. High hardness due to the higher carbon content. Resistant to friction, galling, erosion, corrosion and thermal fatigue. **Applications:** continuous casting rolls, particularly on the straightening and horizontal zone, pinch rolls.
CORRESIST	-O	2.4		◆							◆◆	◆◆	◆◆	◆◆			◆◆	Alloy depositing a chromium-nickel-molybdenum austenitic stainless steel. The addition of rare earth elements, nitrogen and carbon improves resistance to corrosion and high temperatures. **Applications:** continuous casting rolls, particularly on the upper segment with foot rolls.
	-S	2.4 - 3.2																

◆ suitable **◆◆ highly suitable** Gas shielded (-G) Open arc / self shielded (-O) Submerged arc (-S)

Welding machines

Welding Alloys designs and manufactures specialist welding machines for cladding and rebuilding rolls in steel plants. Developed through years of practical experience, these machines combine proven welding technology with robust construction to meet the demands of continuous operation.

The Roll Cladder machine is engineered for cladding and hardfacing continuous casting rolls, hot strip mill rolls, pinch rolls, coiler rolls, and upper-segment rolls. It supports various welding processes, weld patterns, and roll sizes, ensuring maximum versatility.

Our standard range includes the R1000, R3000, and R6000 models, designed to handle rolls of different sizes and weights. All models can be equipped with single or multiple welding heads and set up to clad one or several rolls simultaneously, depending on operational needs. The machine welds the journal, steps and roll body in one continuous operation and can be configured for FCAW, with or without gas shielding, or SAW.

The Roll Cladder improves maintenance efficiency and ensures precise, high-quality welds, supporting reliable roll performance and extended service life in steel production.

Wear plates and engineered components

Steel plants face aggressive wear from iron ore and other raw materials, sinter, coke, scrap, slag, and mill scale. Handling and screening equipment are exposed to both abrasion and impact, with wear most severe at feed points, bends, and discharge areas.

We supply composite wear plates in flat form, or as cut and formed parts and fabricated engineered components, designed to protect high-wear zones and extend maintenance intervals.

Plate selection includes Hard*plate*™ for abrasion, Tuff*plate*™ for impact, Hard*plate*™ FlowMax for improved material flow and Hard*lite*™ where reduced weight is required.

Examples include liners, feed boxes and transition pieces plus discharge and swivel chutes, telescopic feed and suction tubes, grizzly deck frames, screen assemblies and perforated screen deck panels.

Our Integra™ teams can manufacture complete parts and assemblies to a drawing or sample, delivering finished components ready for installation in the plant.

Quality & innovation

Since 1966, innovation has been central to Welding Alloys. Our R&D, technical and engineering teams develop welding wires, repair techniques and engineered wear solutions that respond to changing operating conditions across steel plants. This includes practical welding methods and application-specific solutions designed to extend component life, improve reliability and help maximise plant uptime. This ongoing work ensures our consumables, solutions and services keep pace with the operational needs of the industry.

We maintain full control over design, development and manufacturing, and we apply the same standards to the delivery of our engineered wear solutions and services. Our wires are produced on Welding Alloys equipment, with laboratory testing and quality checks carried out throughout the process. Our engineered wear services are delivered by experienced technical teams using qualified procedures and proven application knowledge.

We support customers across the steel industry and other sectors, providing technical expertise and advice to identify and deliver the most suitable wear solution for each application.

Our global footprint

Our specialists and industry experts are active in 150 countries across the world and have an in-depth understanding of the operating conditions and customer requirements across a wide range of sectors.

Find your nearest subsidiary

30+ Subsidiaries

60+ Years

150 Countries

Welding Alloys

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