



Integra™
Engineered Wear
Services

Industry-leading
wear protection
solutions

For Welding **Professionals**



Welding Alloys offers engineered wear services through our global Integra™ teams. With over 80 000 projects successfully completed across various industries, we have solidified our position as a trusted partner.



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Our company

For over 50 years, Welding Alloys have provided industry-leading engineered wear services, both in our workshops and on-site or in situ through our globally positioned Integra™ services teams. Additionally, we offer a diverse range of wear plates, pipes, and components to cater to customers' specific needs and requirements.

With our 25 strategically positioned Integra™ service centres worldwide, our teams of experts are readily available to design, develop, and implement optimal solutions for wear-related challenges, regardless of their complexity, condition, or location. Our aim is to enhance the service life of components exposed to extreme wear conditions while reducing the total cost of ownership for our valued customers through improved performance.

Since 1966, the name Welding Alloys 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.

Today, our R&D and technical teams remain at the heart of the business, able to solve the most complex industrial wear protection challenges by leveraging the latest scientific and engineering practices.

Many of our technological innovations are a result of tapping into our network of academia, standards organisations, welding associations, and research partnerships across the world.

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. With these principles in mind, our service solutions actively contribute to decreased energy consumption and carbon dioxide emissions by extending the life of new and existing parts through efficient repair and maintenance. We continue to improve our products and processes in order to reduce the negative impact on both the welder and the environment.

Welding Alloys Integra™: our offer

Welding Alloys Integra™ provides industry-leading engineered wear protection services and has successfully completed numerous projects worldwide, establishing our position as a trusted global partner of our valued customers.

With a focus on hardfacing, cladding, thermal spraying, and wear protection, our dedicated teams of Integra™ experts deliver optimised customer solutions, designed to tackle a range of wear phenomena including abrasion, corrosion, erosion, friction and impact. To do this, our Integra™ experts conduct no-obligation wear audits to gain a deep understanding of our customers' operations, requirements and expectations.

We strive to maximise customer return on investment by extending the service life of components and reducing the total cost of ownership, whether in our state-of-the-art Integra™ service centres, on-site or in situ. Our solutions allow us to either repair worn components back to their original profile or provide preventative maintenance to new parts before they are put into operation.

All our Integra™ projects use Welding Alloys' own manufactured advanced welding and thermal spray consumables, wear plates, and components, combined with our automated welding equipment. Through our technical knowledge and expertise, we consistently deliver world-class wear solutions, which incorporate:

- **Design and development**
- **Engineering**
- **Machining**
- **Fabrication**
- **Cladding**
- **Hardfacing**
- **Thermal spraying**
- **Laser welding**
- **Plasma transferred arc welding**
- **Ceramics**
- **Non-metallic wear protection**

All our Integra™ projects adhere to international quality and safety management standards, ensuring that we meet and exceed the highest industry requirements worldwide.





Welding Alloys operates 25 strategically located Integra™ service centres around the world.



Our no-obligation wear audits deliver an analysis based approach towards plant maintenance wear problems.

Benefits of Integra™

Reduce total cost of ownership with our repair services for worn components

Our repair services are designed to rebuild components back to their original profile and improve resistance to various wear phenomena. Increased resistance to wear combined with the savings generated from not having to buy new expensive parts, significantly reduces total cost of ownership. Our skilled technicians are equipped to carry out repairs on all types of vital equipment used in a broad range of industries, either on-site or in situ.

Increase plant uptime with our tailored solutions

Our Integra™ services specialists assist maintenance departments in driving down operating costs while simultaneously increasing operational output and efficiency. We conduct comprehensive wear audits and propose optimal solutions to improve the lifetime of components subject to wear based on specific requirements and data from over 80 000 completed bespoke projects, using our unique solutions.

Optimise components to outperform those supplied by OEMs

Welding Alloys collaborates closely with equipment manufacturer experts and specialists in material sciences to develop and produce innovative components and wear protection solutions for supplied components. By leveraging our collective expertise, we ensure that the new components meet the highest quality standards and are designed to enhance the performance and durability of the original equipment.

Reduce environmental impact by extending the lifetime of components

Regardless of the complexity, condition or location, we are committed to extending the service life of parts. This results in decreased energy consumption and carbon dioxide emissions. By utilising Welding Alloys-produced consumables, cutting-edge machinery, and advanced technology, we minimise the negative impact on both welders and the environment.



Industries

As experts in wear protection, our specialised products, equipment, solutions, and capabilities are beneficial for short and long-term plant efficiency, across a wide range of industries.

Our goal is to deliver flexible solutions that are customer-based, with a focus on the reduction of total cost of ownership.

We cater to a range of industries including but not limited to:

- Cement
- Steel Making
- Mining, Quarries & Earthmoving
- Power
- Sugar
- Recycling & Waste
- Pulp & Paper
- Oil & Gas/ Petrochemical
- Hydropower
- Railways
- Agriculture & Food



Our Integra™ experts work closely alongside customers, OEMs and partners to deliver optimum solutions tailored to individual operations and requirements, that consistently reduce total cost of ownership. We design and produce advanced welding consumables, automated welding equipment and an extensive range of engineered wear protection solutions to reduce maintenance costs and increase the lifespan of components in every industry.

Whether it's regular maintenance or specific applications, our Integra™ teams are equipped to deliver optimal solutions.

Some of the components we provide wear solutions to include:

- Valve and valve components
- Screw feeders
- Primary and secondary crushers
- Kiln repairs
- Grinding components
- Tubes, pipes and elbows
- Column and boiler panels
- Steel mill rolls
- Mobile equipment
- Sugar rolls, knives and hammers
- Hot working tools and dies
- Rail gauge and corners



Cement: solutions for VRM components



Mining: hardfaced excavator bucket



Steel: full turnkey roller solutions



Sugar: repair and refurbishment of rolls

Our solutions

We offer a comprehensive product portfolio, providing hardfacing, cladding and spraying solutions designed to address wear-related challenges across a diverse range of applications.

Our innovative solutions not only meet but exceed the expected lifespan of both new and existing components, in turn optimising operational efficiency and reducing maintenance costs.

MillCarb™

Welding Alloys has developed an industry-leading solution dedicated to protecting critical parts used in cement and coal-fired power plants. MillCarb™ is a fully repairable specialist hardfacing method that delivers optimised wear resistance for grinding components, offering superior protection to abrasive wear. This is achieved through a specially designed microstructure, which

combines the wear-resistant properties of advanced complex ceramics and the shock-absorbing properties of a metallic matrix.

MillCarb™ significantly outperforms competitor solutions time and time again, handling up to three times more throughput when compared to other standard solutions.

Why use Welding Alloys' MillCarb™ solution?

- A fully repairable welded ceramic composite metal matrix alloy
- Optimised engineered wear protection solution for grinding components
- A cost-effective solution to refurbish worn components
- Superior wear resistance compared to competitor products





RMaxLife

RMaxLife is Welding Alloys' unrivalled solution for the refurbishment of roller presses. RMaxLife is proven to substantially extend roller press lifetime without the need for intermediate repairs, ensuring operations can continue at maximum plant capacity. The cost-effective solution is specially developed using our hardfacing consumables to absorb shock, providing superior resistance to impact and abrasion.

Why use Welding Alloys' RMaxLife solution?

- Total cost of ownership is reduced through increased wear life and fewer maintenance cycles
- A complete solution that can eliminate the need to replace expensive roller press rollers
- Improved overall mill efficiencies
- Provides a welded solution with unrivalled impact resistance
- No need to disassemble - repair can be carried out in situ



Integra™ Mill

Our Integra™ Mill range of welding cored wires are specially designed for hardfacing and re-profiling of grinding components in grinding mills. The Integra™ Mill range of products has proven to be effective in combating wear when grinding raw materials, clinker, coal, blast furnace slag and other materials found in the cement, mining, power generation and mineral processing industries.

Our Integra™ Mill products combined with Welding Alloys' application technologies offer outstanding results on rolls and tables of all types.

Why use Welding Alloys' Integra™ Mill solution?

- Improved service life
- Improved grinding efficiency
- Reduced energy consumption through repair over replacement
- Optimised engineered wear protection solution for grinding components

3D-Carb™

A hardfacing solution designed to address specific wear problems resulting from extreme levels of thermal fatigue, impact and abrasion. The innovative method uses a 'bimetallic' matrix embedded in a redefined structure to restore parts back to their original profile. By analysing wear phenomena data, the solution is manufactured specifically for the intended application.

Why use Welding Alloys' 3D-Carb™ solution?

- Reduced component wear rate
- Reduced maintenance requirements
- Reduced total cost of ownership
- Application-specific designs targeted to high wear areas
- Increased service life and performance of parts, therefore efficient energy consumption
- Increased production tonnage


SprayClad®

SprayClad® is a unique thermal spray solution best suited to prevent erosion, abrasion and corrosion. SprayClad® is developed to deliver a bond layer and hard coating, and is finished with a sealant. This effectively reduces slagging and corrosion, while minimising the need for surface cleaning. SprayClad® can withstand prolonged exposure to corrosive gases, alkali and chloride salts, as well as high temperatures found within industrial boilers. The solution can be applied to a range of applications, including bearing journals, bagging components, cone crushers, fan impeller blades, fan casings and ducting.

Why use Welding Alloys' SprayClad® solution?

- Adaptability of the coating tailored to plant needs
- Improved corrosion, abrasion and/or erosion resistance
- Faster than traditional cladding techniques
- No water needed in the heat exchanger as process is 'cold'
- Reduced fouling and cleaning
- Total cost of ownership reduced through increased wear life and fewer maintenance cycles

SprayClad® is unavailable in the USA



Welding Alloys specialises in the application of thermal spray coatings for the repair and maintenance of components using the latest surfacing techniques.



Our Integra™ service teams analyse the wear on components to provide the best solution to customers.

Advanced Wear Components

Designed and manufactured machinery components can be hardfaced to improve the lifespan of the part before being placed into service. Areas that are prone to wear from increased abrasion can be hardfaced using our range of advanced hardfacing cored wires to balance the wear characteristics across the surface of the component.

Why use Welding Alloys' Advanced Wear Components?

- Less localised wear (grinding faces maintained)
- Increased abrasion resistance
- Resistant to shock damage and subsequent spalling
- Maintains production output and specific energy consumption
- Increased component lifetime
- Reduced maintenance costs
- Reduced total cost of ownership

Advanced Coatings

Understanding the material type and the way it can react to the exposure of various wear types is important when selecting a coating. Our range of advanced coatings, which includes ceramics, paints, rubbers, resins and plastics, provides solutions to a range of different wear problems. When used together, they can extend the lifespan of the component even further.

Why use Welding Alloys' Advanced Coatings?

- Experts in wear data analysis to improve component life
- Free no-obligation wear audit
- Solutions tailored to the component
- Reduced maintenance costs
- Increased plant efficiency

Composite wear plates



Our range of composite wear plates consist of a base plate of construction steel, hardfaced with a selection of chromium and complex carbide based cored welding consumables.

Hardplate™

Our heavy-duty composite wear plates are supplied with a standard overlay thickness from 4 to 15 mm. It is designed to endure elevated operating temperatures and harsh environments. Suitable for applications such as fans, cyclones and vertical roller mills.

Hardplate™ FlowMax

Our smooth, crack-free wear-resistant plates are design for applications where hang-up, carryback and impact occur in combination with abrasive wear. These plates have a low coefficient of friction, offering better sliding properties. Suitable for applications such as mobile equipment, hoppers and chutes.

Hardlite™

Our ultra-thin composite wear plates offer the ideal solution when weight is a key consideration, while offering unrivalled wear protection, with a hardness of 64 to 66 HRC. Suitable for applications such as hoppers, chutes, fan impellers and dynamic separator rotor blades.

Tuffplate™

Our impact resistant wear plates are designed for applications susceptible to a combination of abrasion or impact. The wear resistance of Tuffplate™ is fully maintained at temperatures of up to 200 °C. Suitable for applications such as hammers, bucket liners and crusher components.

Glassplate™

Our specially developed plates for the glass industry contain a high chromium cast iron wear protection layer with an ultra-low nickel content, outperforming quenched and tempered plates. Suitable for applications such as hoppers, chutes, tubes, pipes, elbows and cyclone separators.

Innovation



**Innovation is at the core of everything we do,
we never stop learning.**

Innovation is an integral part of Welding Alloys' approach to industrial solutions, and we have consistently invested in this area since our inception in 1966.

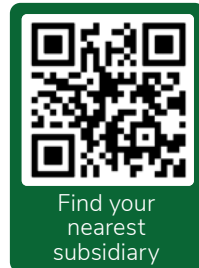
Our continuous development approach has aided the identification of new opportunities worldwide and given birth to numerous innovative solutions, always with customer satisfaction as our focus. Our simple philosophy allows us to continue to deliver best-in-class products and services to customers operating in various industries across the globe.

Our unique culture of continuous innovation forms the backbone of the company and our teams of engineers are constantly interacting to share knowledge, information and ideas. Collaboration across on-site operations and the consideration of customer requirements to improve existing products and develop new ones, are always based on sound scientific principles and engineering solutions.

Over the past three decades, Welding Alloys has built, and continues to grow, a global network of universities and research organisations. This allows us to remain at the forefront of the latest market trends and state-of-the-art technological innovations.

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.



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