



Innovative Cement Solutions

Taking wear
protection
to the next level

For Welding **Professionals**



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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 an industry-leading range of engineered wear services in our workshops or in situ, as well as a wide range of wear plates, pipes and components. For more than 50 years, industrial users across the globe have relied on the expertise of Welding Alloys to increase productivity and reduce costs through effective repair and maintenance solutions.

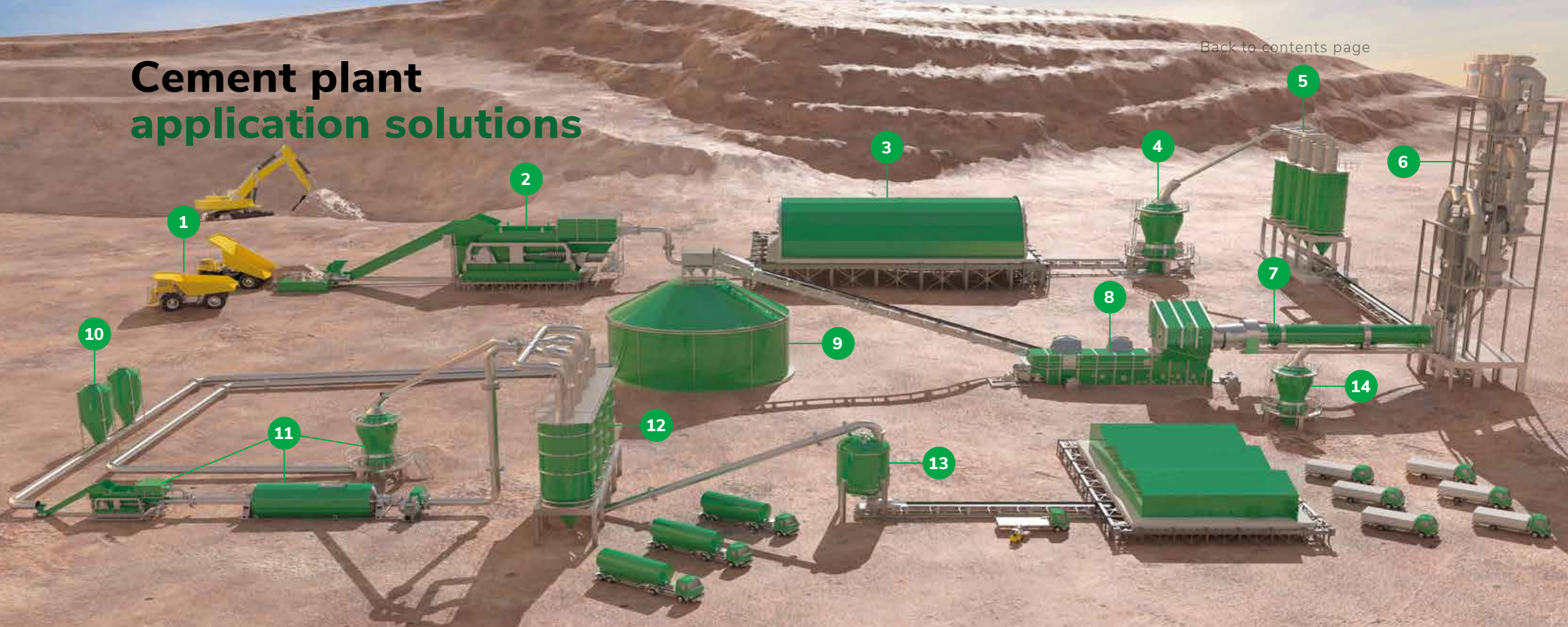
Since 1966, the name Welding Alloys has been synonymous with excellence in research and development (R&D), resulting in a steady stream of innovative products and advanced technical solutions and services.

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. We deliver fast-track wear protection solutions in the most challenging environments and industries, through multidisciplinary teams located around the globe.

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 this in mind, we have developed welding wires that emit less harmful fumes, and we manufacture a range of our wires using processes that produce less harmful waste for the environment. Our service solutions also contribute to decreased energy consumption and carbon dioxide emissions by extending the life of new and existing parts through 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.

Cement plant application solutions



- 1. Limestone Quarry
- 2. Crusher
- 3. Limestone Stockpile
- 4. Raw Mill
- 5. Raw Meal Silo
- 6. Pre-heater/ calciner
- 7. Kiln
- 8. Clinker Cooler
- 9. Clinker Silo
- 10. Gypsum & Additive Silos
- 11. Cement Mill
- 12. Cement Silo
- 13. Packing Machine
- 14. Fuel Mill



Impact and abrasive wear of buckets and loaders can be significantly reduced using our extensive range of wear plates to line or reline these parts. This solution will increase the service life of mobile equipment.

Hammers, blow bars, mantles and teeth can be repaired and maintained using our hardfacing solutions. Our range of cored welding wires can be used to optimise crusher performance, reduce maintenance costs and in turn lower the total cost of ownership.

Our wear audits are designed to provide cost effective wear solutions tailored to your plant. Improving wear resistance to reduce maintenance and shutdown periods.

Welding Alloys has extensive knowledge of Vertical Roller Mill (VRM) and Roller Press repairs and their requirements. Our global service teams can refurbish parts either on-site (usually in situ) or at a local workshop, using our welding mill kits and range of advanced flux cored wires.

To combat the abrasive wear which can take place on the equipment feeding the silo and extraction points, Welding Alloys provide a range of wear plate solutions. Our wear plates are proven to increase the service life of chutes, feeders and extractors.

Welding Alloys' technical experts provide turnkey solutions, for the design, manufacture and supply of wear plates, pipes and tubes or, overlay products. All projects are undertaken in accordance with OEM or customer design specifications to fulfil your unique requirements.

Welding Alloys have developed a specific flux cored wire, GAMMA 182 for the repair of cracks in kiln tyres, kiln rollers and the kiln shell. Extensive tests have shown that compared to the performance of welding electrodes, our flux cored wire can halve the time required to repair cracks and uses up to 15% less consumables. This significantly reduces downtime and improves kiln productivity.

Welding Alloys help ensure your clinker cooler, breaker and other components continue working at optimum performance between maintenance intervals. Our innovative advanced wear solutions are designed to combat abrasion and high temperatures.

Our heavy-duty composite wear plates offer versatility and adaptability to address various applications and wear problems, including collection, feed and diverter chutes, as well as extraction conveyors.

Welding Alloys can rebuild conveyors and screw flights worn from material abrasion using our fixed installation welding machine and cladding consumables, thereby maximising productivity and quality.

Wear life of the Vertical Roller Mills (VRM) and Roller Presses can be significantly increased with Welding Alloys' specially developed solutions such as RPSMaxLife for RPs and MillCarb™ for VRMs. RPSMaxLife greatly reduces the risk of fatigue cracking in the substrate layers through its shock resistant design, eliminating the need for intermediate roller repairs.

Welding Alloys can provide internally protected pipes and tubes with either a welded high chrome hardfaced internal protection or alumina, zircon or silica ceramic lining to drastically increase its lifespan. This technology is also useful where the use of SRF materials are pneumatically transported to the kiln and calciner firing systems.

The SprayClad® solution can increase the wear life of bag saddles and filling nozzles, providing a solution with a smooth low friction finish. This is ideally suited to combat the abrasive wear these parts are subject to.

These parts are exposed to extreme wear and our engineering specialists can provide increased wear life through our Integra™ MillCarb™ solution. MillCarb™ has been used at coal fired power stations around the world and proven to give between 2-3 times the life compared to standard cast rolls.

Welding Alloys and cement: our integrated offer

Our teams of technical engineers provide wear protection services and solutions in the cement industry either in situ or in our workshops across the world. We offer a range of solutions for improved resistance to all types of wear phenomena, including abrasion, erosion, and impact. Our fully operational service teams use Welding Alloys' advanced range of welding consumables and automated welding equipment for rebuilding, hardfacing, cladding, and the fabrication of new components.

We have an extensive range of welding consumables, specifically developed for component wear within cement plants. Combined with a range of state-of-the-art welding equipment and engineered components, Welding Alloys guarantees to extend the life of service parts and improve the efficiency of your operation.

Further information on our range of welding consumables and welding machines can be found on our website and in our additional brochures.



Our Integra™ service engineers offer a complete solution for Vertical Roller Mill grinding components.

Our solutions

Welding Alloys collaborates with industry leading mill OEMs and experts in material sciences, to develop hardfacing solutions that deliver optimum performance. These solutions have been developed, tested and optimised for wear protection of vertical mill grinding components, setting a new standard in the cement industry.

MillCarb™

To protect your mill from the daily grind, Welding Alloys has developed another class leading solution for the wear protection of grinding components in the cement industry. MillCarb™ is a fully repairable hardfacing solution providing optimised wear protection of grinding components. It offers superior protection to abrasive wear thanks to the 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, typically improving the lifetime of service parts by 100% or more in most cases.

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



Our specialised products, equipment, solutions, and capabilities have proven beneficial for short and long-term cement plant efficiency.



Integra™ Mill

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

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

RPMaXLife

RPMaXLife offers shock and wear resistant roller press refurbishment and has proven effective for customers around the world. RPMaXLife provides a cost effective wear and impact resistant solution for roller press rolls, using specially developed materials and procedures, which can be applied to roller press rolls of all sizes. The unique solution substantially improves roller life, without the need for intermediate repairs, ensuring the roller delivers maximum plant capacity by reducing wear and downtime.

Why use Welding Alloys' RPMaXLife 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
- Improvement in overall mill efficiencies
- Provides a welded solution with unrivalled impact resistance
- No need to disassemble - repair can be carried out in situ



Welding Alloys specialise in the application of thermal spray coatings for the repair, and maintenance of applications using the latest surface techniques.

SprayClad®

Sprayclad® is a unique thermal spray solution best suited to prevent erosion, abrasion and corrosion. This includes the protection of fan impeller blades, fan casings and ducting. The solution also protects the internal parts of the kiln shell from chemical and abrasive attack which can cause corrosion and reduction in the shell thickness. Sprayclad® arc spray, developed to deliver a bond layer and hard coating, 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 and the high temperatures found within the kiln. The solution can be applied to a range of other applications including bearing journals, bagging components and cone crushers suffering from wear due to elevated temperature, corrosion, erosion and other wear phenomena.

Why use Welding Alloys' SprayClad® solution?

- Adaptability of the coating tailored to your plants needs
- Improved corrosion, abrasion and/or erosion resistance
- Up to 75% 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

Composite wear plates



Welding Alloys manufactures a range of welded overlay plates, providing cost-effective solutions to wear problems faced in the cement industry.



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 designed to endure elevated operating temperatures and harsh environments. Suitable for applications such as fans and cyclones.

- Standard total overlay thickness from 4 to 15 mm
- Wear resistance is fully maintained at temperatures ranging from room temperature to 700°C, depending on the plate thickness
- Tailored products and solutions available on request
- Through-thickness hardness and wear resistance



Hardlite™

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

- Total plate thicknesses from 4 to 6 mm
- Harder than quartz (64 to 66 HRC)
- Wear resistance is fully maintained at temperatures of up to 300°C



Tuffplate™

Our impact resistant wear plates are designed for applications susceptible to a combination of abrasion and impact. Suitable for applications such as bucket liners and crusher components.

- Overlay thicknesses from 4 to 8 mm
- Wear resistance is fully maintained at temperatures of up to 200°C



Welding consumables



Advanced welding consumables specially designed to protect against wear from abrasion, erosion and impact.

Welding Alloys offers an extensive range of welding consumables for hardfacing, cladding, joining and repair applications, dedicated to protecting parts from wear. Our cored wires are produced using Welding Alloys manufacturing equipment and technology, which means we have complete control over the whole process and can ensure the highest quality products.

Our HARDFACE product family is a range of iron based cored wires for build up or hardfacing, offering increased resistance to wear from abrasion and impact, making them an ideal solution for cement plant applications.

We also offer GAMMA 182, a self-shielded nickel based cored wire that is especially suited for repair and maintenance of key equipment in cement plants, including the repair of cracks in kiln tyres, rollers, shells and cement ball mill heads.

Our technical experts are located globally to support customers in choosing the right consumable for their specific application. Where required, we will partner with customers to provide innovative, custom solutions that can respond to even the most unique and demanding wear phenomena.

Welding machines

Improve efficiency of repair and maintenance operations by automating the process with a Welding Alloys machine. Our range includes fixed installation, portable and custom welding machines, suitable for the hardfacing or rebuilding key components used in cement plants, such as tables and rolls operating in VRMs.

Welding Alloys incorporates the latest technologies in our automated welding equipment, improving performance and accuracy of the welding process. This technology complements the precision engineering mechanics resulting in maximum performance from our welding machines.

Our welding machines are capable of carrying out complex and precise welding patterns through the easily programmable D3 Touch and D3 Pendant control technology.

Our range of heavy-duty fixed installation equipment is complemented by the flexibility offered by our portable equipment, or a customised machine designed for specific types of applications.



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.

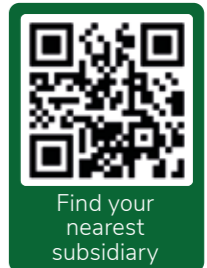
Our continuous development approach has aided the identification of new opportunities and given birth to numerous innovative solutions, always with customer satisfaction as our focus. Our simple philosophy allows us to continue to deliver best-in-class products and services to every major industrial sector 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.



www.welding-alloys.com

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