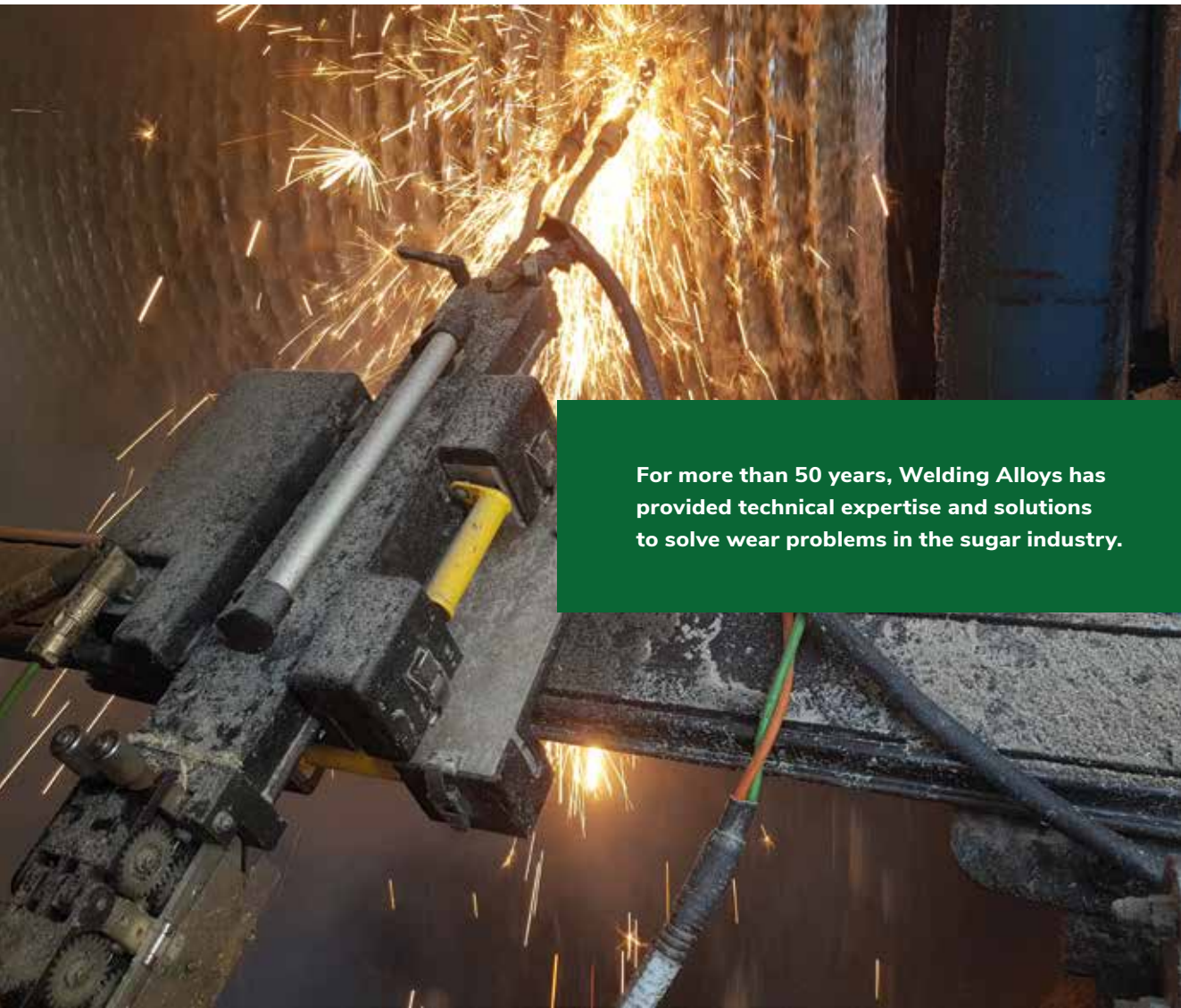




Sugar Cane Solutions

Increased wear
resistance to
maximise extraction

For Welding **Professionals**



For more than 50 years, Welding Alloys has provided technical expertise and solutions to solve wear problems in the sugar industry.



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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.

Sugar cane application solutions



1. Harvesting



Our range of composite wear plates and hardfacing cored wires can be used to protect parts on harvesting equipment such as smooth wear rings, drag plates and crop dividers. Welding Alloys' technical experts provide tailored solutions to combat wear from impact and abrasion.

2. Cane Reveal

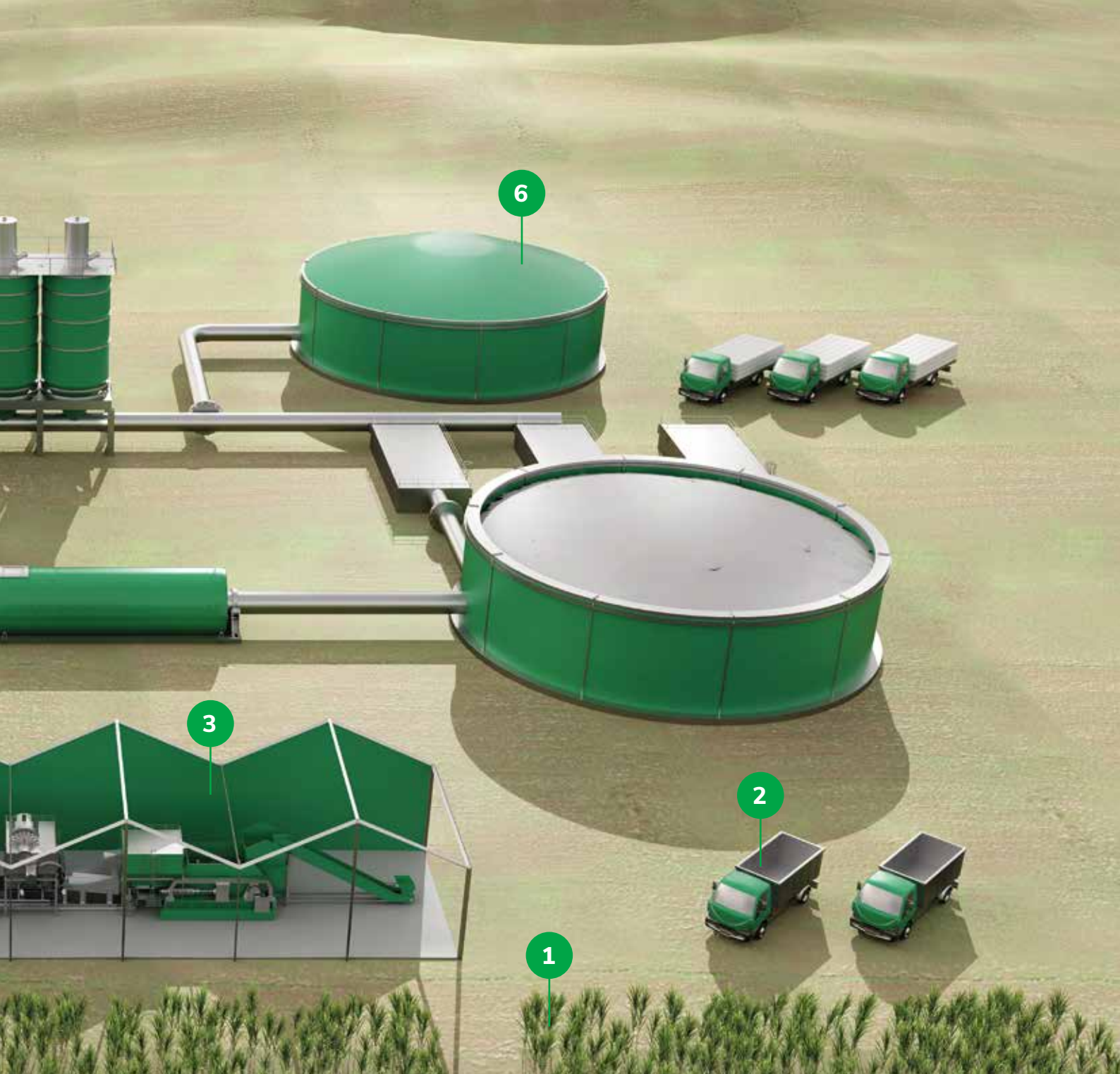


Cane unloaders and grabs can be repaired by our global service teams, combatting the effects caused by continuous loading and unloading. Our teams significantly improve the lifetime of these parts compared to other solutions.

3. Preparation



Welding Alloys' technical teams can repair shredder parts to the original OEM design dimension and tolerances using our extensive range of cored wires, advanced welding procedures, and automated welding equipment. Cored wires like **HARDFACE DIAMOND** and **HARDFACE TIC-O** can be used to protect these parts.



4. Crushing & Milling

5. Sugar Bagasse

6. Refinement & Packing



Sugar crusher rolls are subject to high levels of corrosion and abrasion. To prolong service life and reduce downtime, arcing of the rolls can be carried out using our Sugar Mill Kit (SMK) and hardfacing cored wires. This can be done on site during service or in a workshop.



Compared to standard solutions Hardplate™ is one of our composite wear plates proven to extend wear life of bagasse cane drivers by up to 24 months in high compression areas. Our technical teams can also extend the lifetime of mill fans using our Hardlite™ wear plate, specially designed for areas where lower liner weight is important.



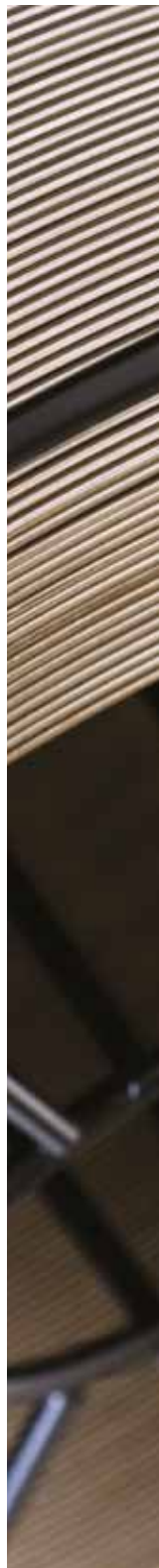
Both wet/dry material passing from hoppers to drying machines can cause erosion. Welding Alloys' turnkey solutions include design, manufacture and supply of wear plates, pipes and tubes or overlay products. All in accordance with OEM or customer designs, to the most unique of requirements.

Welding Alloys and sugar cane: our integrated offer

Welding Alloys has decades of experience providing wear solutions to sugar mills across the globe. Through partnering with customers, we continue to provide innovative solutions that will significantly increase the service life of parts and reduce total cost of ownership. We achieve this through our integrated product and service offering of welding consumables, welding machines, wear plates, pipes and components, as well as our engineered wear services.

Our extensive range of advanced welding consumables are produced using our own manufacturing equipment at sites located globally, dedicated to solving wear problems faced in sugar mills. We also design and manufacture automated welding equipment for rebuilding and hardfacing to increase maintenance efficiency and reduce downtime.

Complementary to consumables and machines, we have fully operational service teams located globally to provide wear protection services and solutions. All our teams use Welding Alloys' own manufactured advanced welding consumables and automated welding equipment.





Welding Alloys provides complete solutions to increase the lifetime and efficiency of parts used in sugar mills.

Welding consumables

Through our extensive range of consumables, we provide tailored solutions to increase the wear resistance of key components used in the sugar industry, including crusher rolls, scrapers, hammers, knives, and more.

We offer cored wires and electrodes dedicated to sugar mill repair and maintenance applications, specially formulated to resist wear from abrasion, corrosion and impact.

Based on decades of experience, we have expert knowledge of the repair process and hardfacing alloys required to protect the rolls used in the crushing and milling process.

Our specialist products provide the necessary wear characteristics to increase service life of the roll and provide good grip on the sugar cane and bagasse to increase extraction efficiency.

Welding Alloys partners with customers to provide tailored solutions. Depending on the specific requirements, we can offer different solution types to increase wear resistance of components used in various areas of the mill. Our technical experts will support in determining the right solution.



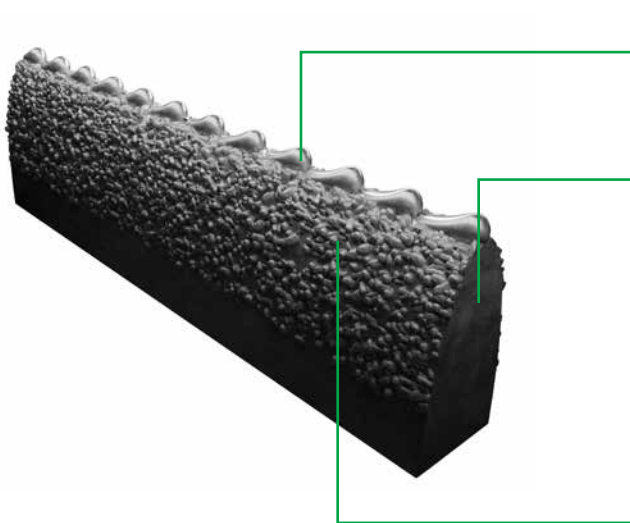


Arcing of the rolls increases the grip of the roll to the cane and maximises juice extraction.

Arcing of sugar rolls

Arcing is a welding procedure used to roughen the surface of the roll in order to increase grip and facilitate pulling, tearing and crushing of the sugar cane.

The procedure not only increases extraction rates, but will also extend the service life of the part.



Tear drop / hook:
 HARDFACE MAXEXTRACT PLUS
 HARDFACE MAXEXTRACT

Build up:
 HARDFACE BUF-O
 HARDFACE UCW

Hardfacing layer:
 HARDFACE MAXEXTRACT

Spatter:
 HARDFACE MAXEXTRACT PLUS
 HARDFACE MAXEXTRACT
 HARDFACE ROLLARC-O
 HARDFACE ZUCAR-O
 HARDFACE EXP-O
 ROBOCANE K ZUCAR-O

Consumables by application

Our solutions for rolls

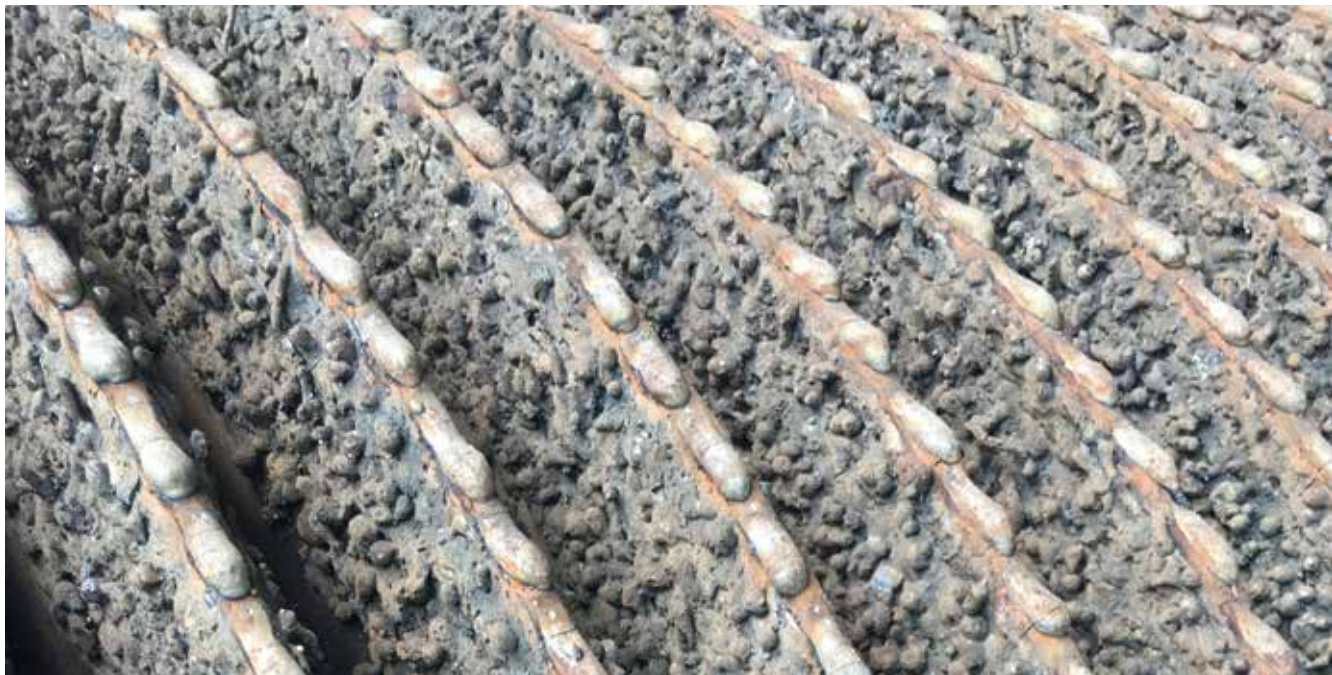
Application	Wire	Electrode	Hardness	Solution type
Roll spatter	HARDFACE MAXEXTRACT PLUS	HARDFACE MAXEXTRACT PLUS-E	62 - 64 HRC	◆◆
	HARDFACE MAXEXTRACT	HARDFACE MAXEXTRACT-E	58 - 64 HRC	◆
	HARDFACE ROLLARC-O		46 - 54 HRC	◆
	HARDFACE ZUCAR-O	WA HARDFACE ZUCAR-E	46 - 54 HRC	◆
	HARDFACE EXP-O			◆
	ROBOCANE K ZUCAR-O		43 - 46 HRC	◆
Roll hook / tear drop	HARDFACE MAXEXTRACT PLUS	HARDFACE MAXEXTRACT PLUS-E	62 - 64 HRC	◆◆
	HARDFACE MAXEXTRACT	HARDFACE MAXEXTRACT-E	58 - 64 HRC	◆
Roll laminate (overlay)	HARDFACE T-O		360 HB	◆
	HARDFACE BUF-O		250 HB	◆
Roll teeth grooves build up	HARDFACE UCW		As welded: 180 HB Work hardened: 47 HRC	◆

◆ standard solution ◆◆ superior solution

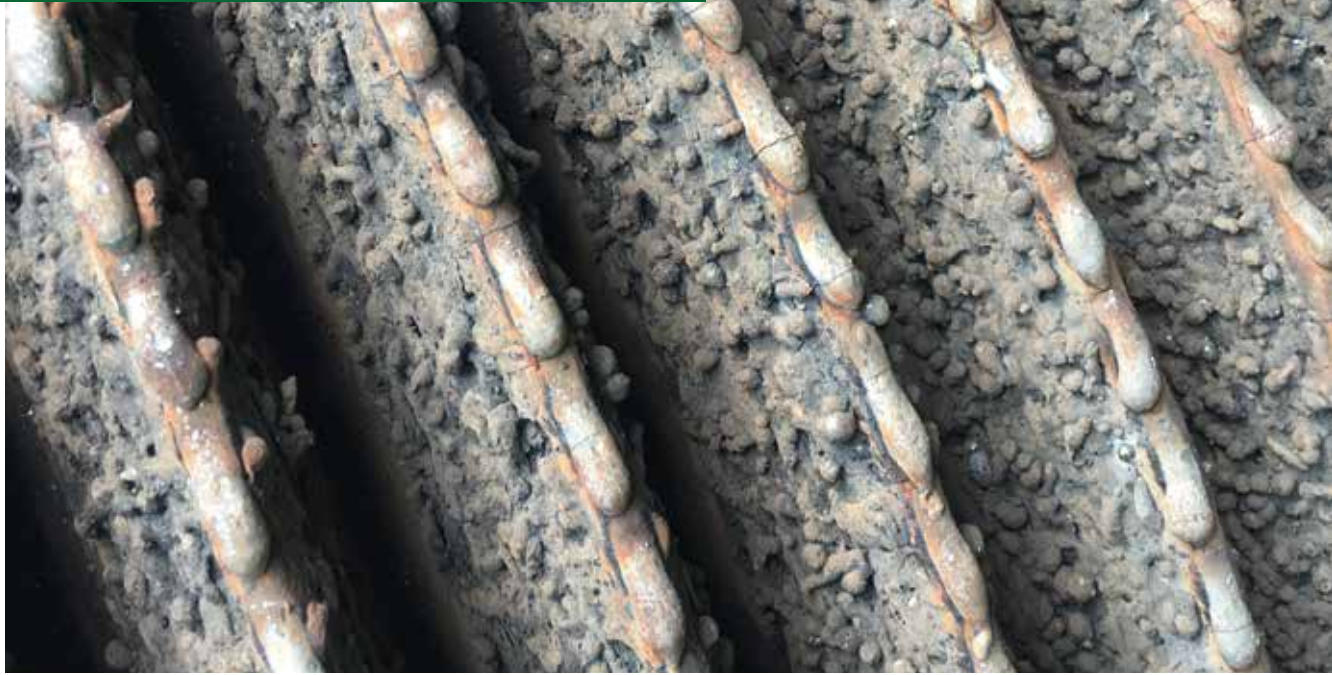
Our solutions for general repair and maintenance

Application	Wire	Electrode	Hardness	Solution type
Flanges	HARDFACE UCW		As welded: 180 HB Work hardened: 47 HRC	◆
Scrapers / turnplates	HARDFACE HC-O		58 - 64 HRC	◆◆
	HARDFACE HC20-O		55 - 60 HRC	◆
Cogwheels	HARDFACE UCW		As welded: 180 HB Work hardened: 47 HRC	◆
	HARDFACE AP-O		As welded: 200 – 240 HB Work hardened: 45 – 55 HRC	
Hammers / knives	HARDFACE TIC-O		57 - 60 HRC	◆
	HARDFACE DIAMOND		60 - 65 HRC	◆
Gouging	GROOVALLOY			◆
Cast iron repairs	CAST NICI-G	CAST NICI-R CAST NICI99-R		◆
	CAST NICI-O			◆

◆ standard solution ◆◆ superior solution



With more than 50 years of experience, we have a wealth of expertise in developing welding consumables specially designed for sugar industry applications.



Sugar mill kit welding machine

Since the 1970s, Welding Alloys has designed and manufactured an industry-leading range of automated welding equipment for specialist hardfacing, cladding, rebuilding and joining applications.

As part of our range of machines, Welding Alloys has developed the Sugar Mill Kit (SMK) portable welding machine, which is specially designed for use in the sugar industry.

This lightweight, automated equipment can be used for arcing, rebuilding and teardrop welding of sugar crusher rolls.

By automating the welding process with our SMK machine, maintenance efficiency is increased and downtime is reduced. Safety is also improved during arcing as the operator is out of the danger area during welding.



Our SMK machine improves welding efficiency compared to manual solutions and reduces maintenance downtime.



Key features of the machine include:

- Intuitive handheld pendant control
- Tool-less assembly
- Two axis motion
- Twin wire welding
- Brushless motors with high power and very high precision motion
- Easy angle adjustment of the welding torches

Why use our Sugar Mill Kit?

- Increased efficiency through independent twin wire feed system
- Reduced maintenance time compared to manual welding solutions
- Easy to operate, set-up and install
- Repeatable programming
- High quality weld deposits
- Built for use on-site during operation or in workshops
- Improved safety
- Globally located technical experts to support customers

Engineered wear services

Welding Alloys offers an industry-leading range of engineered wear services in our workshops or in situ. Our Integra™ service teams have in-depth knowledge of the wear challenges faced in sugar mills and will provide solutions to increase uptime and reduce total cost of ownership of key components.

Our technical experts will analyse the specific wear phenomena occurring and offer the highest quality solutions, tailored to the specific requirements of customers. Our teams can provide complete solutions for rebuilding and hardfacing of sugar mill rolls, in situ or in our workshops, using optimised welding procedures, advanced

consumables and state-of-the-art welding equipment to minimise maintenance downtime and reduce costs.

With over 50 years of experience and more than 80 000 projects completed, we will propose the most viable and cost-effective solutions available anywhere. Our projects are delivered to international quality and safety standards.

Through our ongoing commitment to research and development, an experienced global workforce, and the adoption of new technologies, customers are assured of cutting-edge engineered wear services anywhere in the world.



We provide services in our workshops or in situ, and will recommend the correct welding methods, technologies and consumables, to optimise the service life and performance of parts.

Composite wear plates



Welding Alloys offers a range of composite wear plates to improve the wear resistance and service life of equipment used in the mill and during cane harvesting. Our wear plates can be formed or cut-to-size to protect parts such as fans, primary drag shield plates and drag liners. When used in sugar mill applications, our solutions have proven to outperform competitors.

Hardplate™

Our heavy-duty composite wear plates are designed to endure elevated operating temperatures and harsh environments. Suitable for applications such as side protection/cut parts, fan rotors and casings.

- 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 mill flanges.

- 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 cane knives or scraper blades.

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





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.

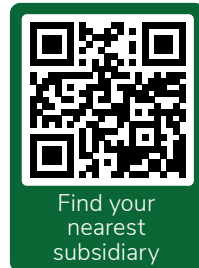
Our continuous development approach has aided the identification of new opportunities in the sugar industry and given birth to numerous innovative solutions, always with customer satisfaction as our focus. Our simple philosophy allows us to continue to deliver best-in-class products and services to customers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