

ABRASAPLATE®
WELD OVERLAY WEAR PLATE

ABRASAPIPE®
WELD OVERLAY WEAR PIPE

LOCTITE®
COMPOSITES APPROVED APPLICATOR

Capabilities & Company Overview

V.05/2024

Innovative coatings to extend the life of critical equipment



AWWELD
Leadership in Life Extension

COMPLETE SURFACING SOLUTIONS

- Hardfacing and surface engineering to extend life of critical equipment
- Large machine shop
- Thermal spray, laser cladding, welding and composite coatings
- Machining, grinding, fabrication, design and engineering
- Head office in Melbourne (Laverton North)
- 24 hour operation when required
- Access to worldwide materials engineering expertise

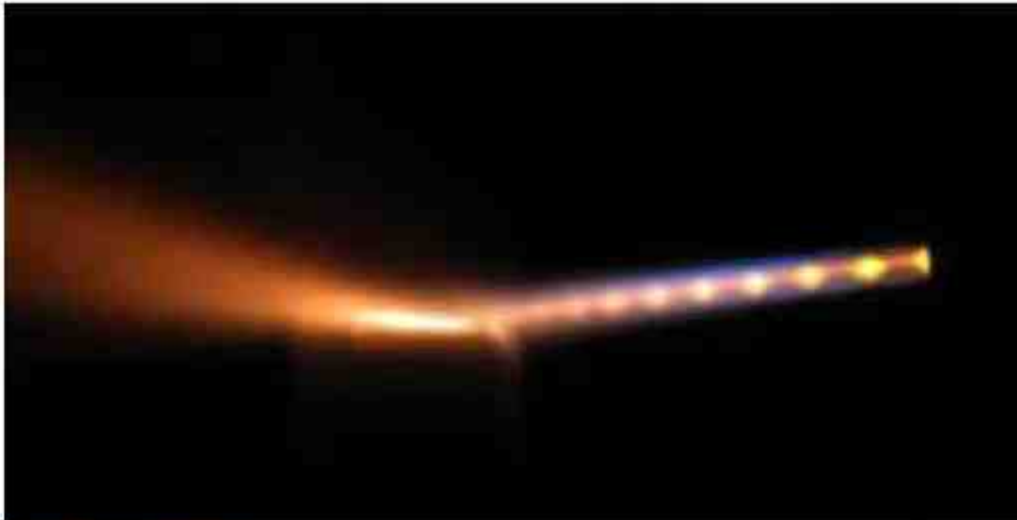


INDUSTRY

EQUIPMENT REPAIRED/MANUFACTURED

Mining & Resources	Crushing and sizing equipment, Wear Plates, Pumps, Vacuum Pumps, Pistons, Chutes, Buckets, Teeth, Valves
Pulp & Paper	Roll Covers, Roll refurbishment, Pumps, Rotary Valves, Boilers, Vessels, AbrasaPlate pulper liners, AbrasaPlate screen and sorter bodies, Vacuum Pumps
Woodchip	Face Plates, Anvils, Chipper Knives, Counter Knives
Bulk Material Handling	Rotary Valves, Transport Screws, Buckets, Chutes, Conveyors, Hoppers
Timber, MDF	Bed Plates, Glue Blenders, Pistons, Saw Guides
Cement	Rotary Valves, Chutes, Hoppers, AbrasaPlate liners, Ducts, Hammers, Boiler Parts
Steel Industry	Roll Coatings, Bearing Chocks, Shafts, Hi temp wearplates
General Engineering	Pumps, Shafts, Valves, Vessels, General Wear Components, Mixers, Rolls, Rotating Components
Quarrying	Crusher component repairs, shafts, AbrasaPlate wear plate, AbrasaStuds, Hardfacing and wear plates





MACHINE SHOP

EQUIPMENT	CAPACITY
Overhead Cranes	80 tonnes total, 10m clearance
Lathes	Up to 2m swing, 12m length
Vertical Borers	30 tonnes on the table, dia 3.0m
Horizontal Borer	3m x 5m x 4m
Cylindrical Grinders	10m length, 1.5m dia
Roll Grinder	6m length
Drills	Up to 1.5 x 3.1 x 2.0m
Surface Grinders	600mm x 2.5m
Robotic Welding	5 Cells, 12m x 3m x 3m, 20T capacity, 9 axes
Metal Spray Booths	Up to 8m x 5m x 4m
Blast/Paint Booths	Up to 15m x 5m x 4m

COATING TECHNOLOGIES

PROCESS	APPLICATIONS
PTA - Plasma Transferred Arc	Tungsten Carbide deposits for extreme abrasion and impact positions
HVOF Thermal Spray Laser Cladding	Versatile wear resistant deposits High-powered Coherent 10kW direct diode D-series laser unit
Twin-Wire Arc Spray	Wide variety of metal spray deposits, especially for dimensional restoration, large scale wear prevention, and in-situ processing
DC-Plasma Spray	State-of the art high melting temperature ceramic coatings
MIG Welding	Fabrication, general hardfacing
Tig Welding	Precision hardfacing
Loctite Composites	Composite coatings for pumps, and industrial components
AbrasaStuds	Wear resistant studs for high impact applications



WORKSHOP CAPABILITIES



Machining
(2m diameter x 12m length
x 30 tonnes b/c)

Cylindrical Grinding
(1.8m diameter x 9m length)



Horizontal Borer
(Table 6m x 3m x 3m)

Robotic Welding
(12m x 3m x 3m)



These two robots can operate individually on different jobs, or with co-ordinated motion on one job, depending on size and complexity.

This system is specifically designed for high speed automated cladding/rebuilding of worn and new parts with a wide variety of hardfacing alloys.

The end result is to not only restore the worn part back to new, but significantly extend the life of the part when compared to OEM replacement components.



In addition, we are currently upgrading our existing gantry robotic facility with an identical robot to the above. This will not only increase the capacity, it will also ensure ease of operation and programming, with all our cladding systems being based on ABB robots.

As well as the above, we have installed two smaller ABB robots with advanced "multimove" software for cladding and hardfacing of smaller jobs, such as automatic tig welding and various R&D projects.



LASER CLADDING

In late 2020, Avweld commissioned our brand new robotic laser cladding system.

The high-powered Coherent 10kW direct diode D-series laser unit is the latest and most powerful laser cladding system of its type in Australia.

The robotic cell includes capacity for welding 30 tonne jobs, up to 3m diameter and 10m long.



WHAT IS LASER CLADDING?

Laser cladding utilises a high-powered energy source to melt an additive stock material and weld it to the substrate, providing the advantageous properties of the additive material to the surface. Because the laser energy is so concentrated, it allows for the cladding material to have a full metallurgical bond, without the disadvantages of typical welding processes by minimising heat affected zone (HAZ), dilution and distortion.

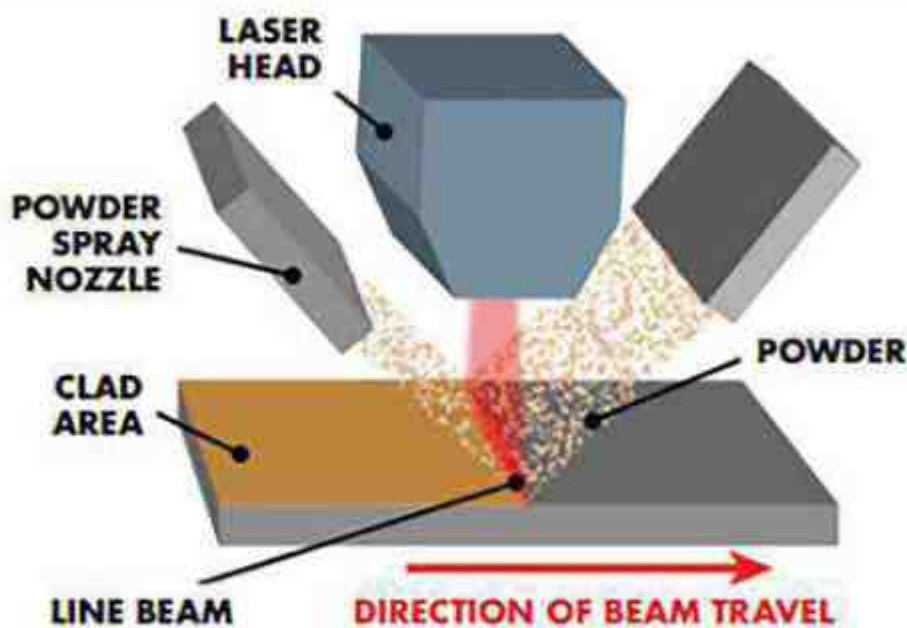
Laser cladding is primarily used to apply coatings to parts which are subject to the individual or combined effects of erosion, abrasion, corrosion, or high temperature. It can also be used to dimensionally restore worn components. Common cladding materials include Tungsten Carbide, Nickel and Cobalt Alloys (such as Stellite, Inconel, Hastelloy), Stainless Steel, Iron-Based Hardfacing.



LASER CLADDING

	HVOF	PTA	LASER CLADDING
Heat Source	Gas Flame	Plasma/Electric Arc	Laser Beam
Coating Thickness	0.05-0.5mm	0.5-5mm	0.1-10mm
Deposition Rates	1-9kg/h	1-5kg/g	up to 30kg/h
Dilution	0%	5-15%	1-5%
Bond Type	Mechanical	Metallurgical	Metallurgical
Bond Strength	<80MPa	<800MPa	<800MPa
Heat Input	Low	High	Medium
Porosity	>5%	100% dense	100% dense

HIGH POWER DIODE LASER POWDER CLADDING



LASER CLADDING ADVANTAGES

- Metallurgical bond vs. mechanical bond
- Low dilution => 1 – 5% typical (~ 1/3 dilution of PTA process)
- Highly controllable/repeatable and efficient process
- Smooth clad = less post machining
- Small heat effected zone = removes need for post weld heat treatment or stress relief
- High quench rates => finer grain structure => higher corrosion potentials
- High deposit speed compared to thermal spray or PTA.
- High deposit efficiency (>80%)



LASER CLADDING

Our laser applied cladding on paper making rollers will provide you with the ultimate in roller service life.



Our cladding has been specifically developed to provide several specific/ tailored benefits such as:-

- Individually selected material types for specific environments
- Welded bond to roller shell, no possibility of delamination/bond failure
- Excellent Doctorability
- Leading Abrasion Resistance
- Elimination of moisture ingress at coating ends
- Material specifically chosen to provide chemical resistance requirements
- No possibility of temperature related cover failures
- Excellent profile retention, greatly increasing the duration between regrinds
- Cladding thickness allows regrinds & repairs should they be necessary
- Our cladding delivers the durability, versatility & machinability for all applications
- Providing longer life for the softer mating rolls, whether rubber or polyurethane

Press/Size Press Rollers:-

Roll Types: Hard Press, Centre Press, Hard Size Press & Breaker Stacks

Non Press/Size Press Rollers:-

Roll Types: Table, wire, felt, table, paper and breast rolls



OVERVIEW

- Weld repair of all types of crushers
- Metal spray of worn journals on eccentric shafts
- Hardfacing of crushing and sizing teeth
- Supply of AbrasaPlate for wear surfaces
- AbrasaPlate screens
- Loctite Crusher Backing



OVERVIEW

- Chrome carbide wear plate
- Weld overlay hardfacing on mild steel backing
- High wear resistance compared to stainless steel, Q&T steel
- Easy to form, weld, roll, cut
- Different grades for different applications
- Good impact resistance
- Available in sheet form or full fabricated assemblies



AVAILABLE GRADES

AP-3000 – High quality general purpose plate designed for medium impact and high abrasion. A high volume of hexagonal chrome carbides in a tough austenitic and martensitic matrix.

AP-7000 – Increased chrome carbide content is achieved through the submerged arc welding process. Resulting in higher abrasion resistance.

AP-X – A 2-3mm thick cross hatch weld overlay on top of any standard plate. Increases impact resistance and allows the plate to become self protecting using a 'rock box' effect.

AP-6000 - Uniformly distributed hexagonal chromium and complex carbides imbedded in tough austenitic and martensitic matrix for high temperature applications.

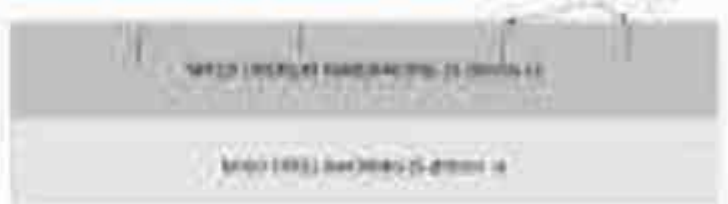
AP-CF (Crack Free) - a high quality compound weld-overlay hardfaced plate. The chrome carbide overlay is applied in a unique fashion which results in a hard, wear-resistance cladding, despite being crack free. The extremely smooth surface finish results in reduced ang up from sticky ores. ASTM G65 wear resistance test results exceed that of AP-3000 AbraserPlate®

Available in Natural (-CF) and Polished finish (-CFP)

COMMON APPLICATIONS

Chutes, ducts, Fans, truck beds, screen plates, transition segments, elbows, buckets, hoppers and crushers.

Cross section of AbrasaPlate



COMMON SIZES (Hardfacing/Backing thickness, mm)

3 on 3 8 on 8

4 on 4 9 on 10

4 on 6 9 on 16

5 on 8 12 on 12

6 on 6 17 on 12

6 on 8 20 on 10

8 on 6

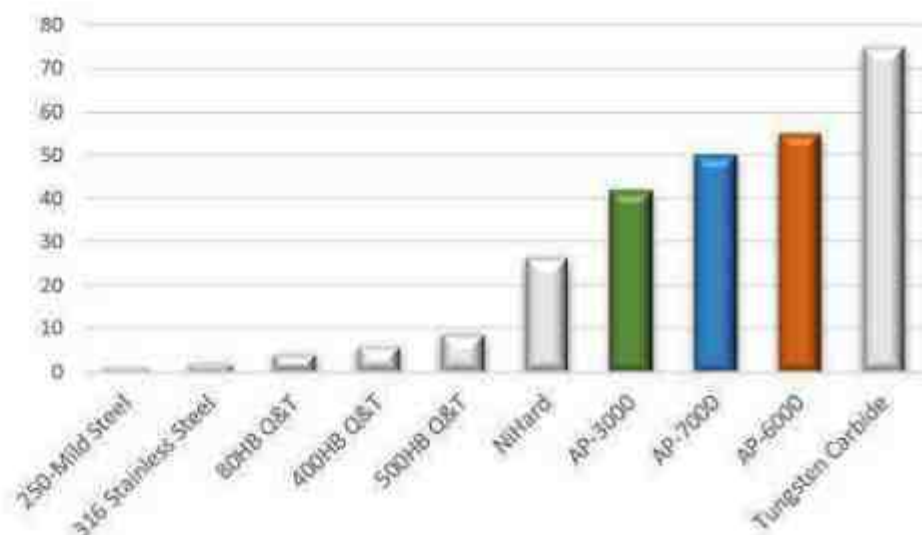
12 on 8

STANDARD SHEET SIZES

1.5 x 3.0m (4.5m²)

2.2 x 3.0m (6.6m²)

Wear Resistance Rating





Rolled AbrasaPlate



Chip Transfer Chute



Steel Mill Coal Screens



Paper Industry Orifice Wear Plate



Secondary Pulper Lining



Hydropulper lined with AbrasaPlate wear plates, with AbrasaPlate-X cross hatch baffle plates



OVERVIEW

Cross hatch AbrasaPlate® is light weight, and outstanding for high impact applications. It is made of mild steel backing, with a weld overlay chrome carbide hardfacing, then a 3mm thick hardfaced cross hatch pattern.

The cross hatch pattern enables bulk solids to fill up depressions in the surface, and then self-protect.

It also provides outstanding impact resistance.



COMMON SIZES (Hardfacing/Backing thickness, mm)

4 on 4 X

4 on 6 X

6 on 6 X

6 on 8 X

8 on 6 X



OVERVIEW

- Internally or externally hardfaced pipe
- Same composition as AbrasaPlate®
- All standard pipe sizes available
- Standard lengths up to 12m available
- Smooth overlay
- Bends and transitions also available
- Very small diameters available
- Hardfaced joints and neck rings available

Custom pipe sizes are also available with multiple layers of hardfacing.

STANDARD PIPE SIZES

mm	inch	OD	ID	Internal Hardfacing (mm)
63	2.5	73	52	3-5
75	3	89	72	3-6
90	3.5	102	86	3-6
100	4	114	98	3-8
150	6	168	150	3-8
200	8	219	197	4-9
250	10	273	249	4-9
300	12	324	297	4-9



OVERVIEW

- One of Awweld's main areas of focus
- Super-heavy duty design based on 30 years of industry experience
- New manufacture and reclamation of any RV
- Consulting and advice on setup and operation
- Tungsten carbide rotor vanes, housing bores, seal journals
- Diamond ground parts for precise clearances
- "Set and forget" long life design
- Oversize heavy-duty motors and bearings

STANDARD ROTARY VALVE SIZES

150x150	637x660
250x250	760x1000
350x350	1000x1000
387x387	1600x1600
450x450	2000x2000



OVERVIEW

- Metal spray or laser clad repair of worn shafts
- Cold-spray process – no induced stresses
- No heat treatment required
- Dimensional restoration of bearing journals
- Hardfacing for seal journals
- Often cheaper than shaft replacement
- Fast turnaround possible



SHAFT TYPES

- Armature shafts
- Commutator shafts
- Crusher shafts
- Distributor shafts
- Drum shafts
- Eccentric shafts
- Feed roller shafts
- Gear shafts
- Paper roll shafts
- Pump shafts
- Refiner shafts
- Steel roll shafts
- Stub shafts
- Tapered shafts
- Turbine shafts
- Winder shafts

**LASER CLADDING JOURNAL
REPAIR AVAILABLE AT AFWELD**



OVERVIEW

- Full overhaul capabilities
- Dimensional restoration of worn components
- Hardfacing of cones, rotors, housings
- Specific application expertise
- Weld overlay, composite, thermal spray coatings as required
- Testing capabilities
- Non-stick coatings to prevent internal build-up of scale





OVERVIEW

- Precision Machining and grinding
- Weld repairs
- Metal spray coatings
- Composite Loctite coatings (Approved applicator)
- Heavy duty solutions
- Full overhaul
- Testing available
- High temperature applications
- Abrasive media applications
- Robotic weld repairs



Avweld are approved applicators of Loctite Composites.

Loctite composites utilise world-leading adhesive technologies to provide repair & coating options for all types of industrial machinery. Composites are available for repair of metal, concrete, rubber and plastics.

Brand new technology for ease of application makes Loctite Composites very competitive.

Loctite Composites can be applied by Avweld, or purchased for self application by our customers.

On-site training is available free of charge.

LOCTITE®

COMPOSITES APPROVED APPLICATOR

Full Loctite Composites range is available, including:

- Loctite Nordbak Wearing Compound
- Loctite Nordbak Fast Cure Wearing Compound
- Loctite Nordbak Brushable Ceramic
- Loctite PC 7255 Sprayable Ceramic
- Loctite Nordbak Chemical Resistant Coating
- Loctite Fixmaster Rapid Rubber Repair Kit
- Loctite Fixmaster Superior Metal
- Loctite Fixmaster Magna-Crete
- Loctite High Impact Crusher Backing
- Loctite Pipe Repair Kit



Worn out pump impeller before repair



Pump impeller after repair with Loctite Wearing Compound, and PC 7255 Sprayable

OVERVIEW

- Supplying all wearing consumables for woodchippers
- Impact resistant weld overlay coatings for longer life available. Proven in Australia's biggest chippers

AWWELD CAN SUPPLY

Chipper knives

Counter knives

Face plates

Knife clamps

Chip deflector

Chip pocket liner

Bed knives

Anvils

Chip breakers

Belly Bands

Ask us about any other wear components required



KNIVES

OVERVIEW

- Knives manufactured new from quality tool steel
- Cryogenic treatment available
- Material selection advice available for broad range of applications
- Knives hardfaced using tungsten carbide and metal spray options

KNIVES

Chipper knives

Counter knives

Bed knives

Top slitter knives

Bottom slitter knives

Guillotine knives

Tube slitter knives



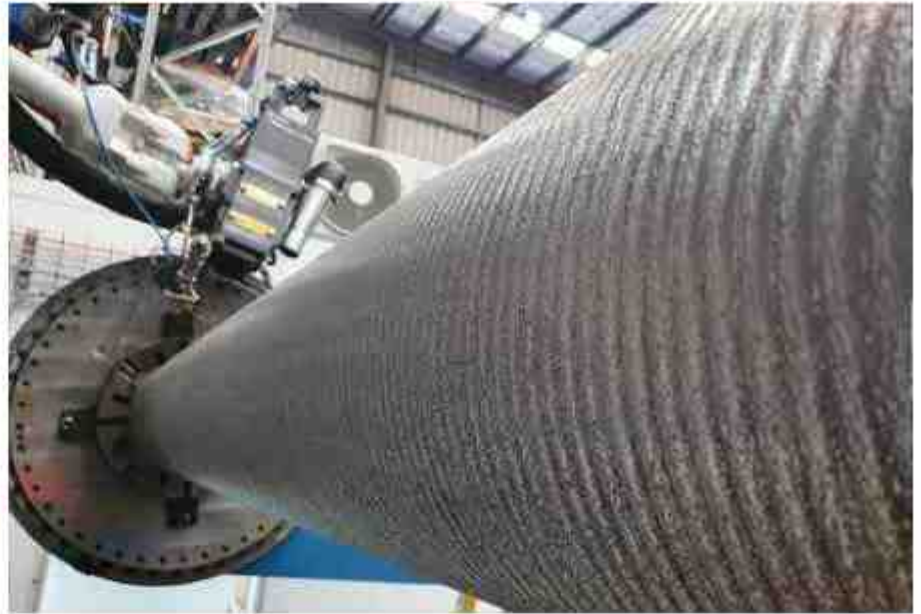
INDUSTRIES

- Woodchip
- Steel
- Plastics
- Paper
- Recycling
- Printing
- Packaging



OVERVIEW

- Precision grinding, machining, coatings
- Super finishing – optical mirror finish possible
- Dimensional restoration, wear resistant coatings, non-stick coatings
- Tungsten carbide, chrome carbide, bronze, stainless steel coatings, Ceramic Chrome Oxide coatings
- PTFE (Teflon™) coatings for non-stick applications



LASER CLADDING ROLL COVERS AVAILABLE AT AVWELD



HYDRAULIC RAMS & PISTONS

OVERVIEW

- Wear resistant coatings for hydraulic pistons
- Replacements for traditional hardchrome coatings
- High density, low porosity, high wear resistant coatings
- Can be superfinished to optical mirror finish
- Increased seal life
- Materials: Tungsten carbide, chrome carbide



OVERVIEW

- Manufacture & refurbishment of all size screws
- AbrasaPlate screw flights
- PTA or laser tungsten carbide weld overlay to flights and cores
- Robotic application
- Supply of replacement flights
- Chrome or Tungsten coatings
- Loctite Composite coatings



OVERVIEW

- Options for metal spray, re-sleeving, or laser cladding repairs
- Any size bearing chocks/chucks can be refurbished
- Often cheaper than new chocks
- Fast turnaround
- Precision machining
- Wide variety of material choices



OVERVIEW

- Manufacture, Repair and Lining of all fan types
- Supply and installation of fan wear plates

HARDFACING OPTIONS

- AbrasaPlate®: Fans can be manufactured entirely from wear resistant chrome carbide plate or with replaceable wear liners. Available in 3+3mm thickness for low weight
- Laser Clad or MIG welded: Tungsten Carbide, chrome carbide or general hardfacing
- Arc-sprayed chrome boron for general purpose wear prevention
- HVOF applied tungsten carbide
- Loctite Composite Coatings: Economical and lightweight, with excellent surface finish



OVERVIEW

- Heavy duty alloy and carbide studs provide outstanding wear resistance in demanding applications
- Applied using stud-welding process
- Provides "self-protecting" layer due to voids between studs
- Replacement studs can be applied directly over worn out studs



STANDARD SIZES

16mm

20mm

20P Pointy studs for timber feed rolls

COMMON APPLICATIONS

Loader, excavator, bogger and face shovel buckets

Truck trays

Dozer blades and push arms

Crusher wear parts

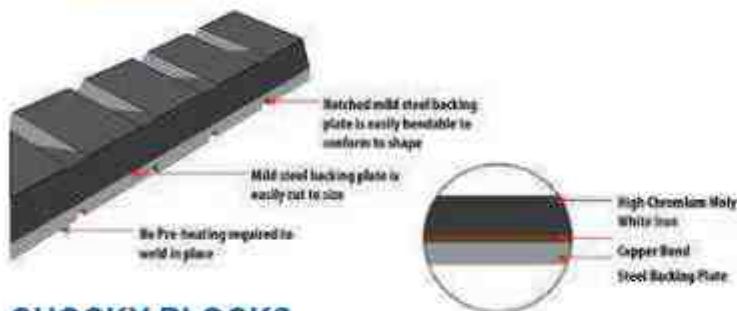
Feed chutes

Ground engaging tools



OVERVIEW

- For high impact abrasion applications in material handling, you can't go past Alloys International's white iron wear products.
- The chrome-moly white-iron castings, are vacuum brazed onto a mild steel backing plate, which can then be easily welded on-site to the wearing surface.
- The white-iron casting includes super hard chromium carbides (1500HV) in a martensitic matrix.
- Especially suited to high impact and abrasion applications.



CHOCKY BLOCKS

Chocky blocks are the most popular cast wear product, due to their ease of installation and distinctive shape. Chocky Blocks are stocked in sizes from 25 to 90mm wide, with 15mm hard surface on 8mm mild steel backing.

Applications include: Fixed & mobile plant, buckets



SHREDDER HAMMER TIPS

Standard, Flared & Butterfly Shapes

- Machined steel base allows for quick & easy in-situ installation
- Cost effective as compared to hard facing
- Superior edge retention & sharpness
- No need to rebuild edges
- Geometric & Engineered design to increase life
- Tips can be rotated for maximum wear life

Alloys manufacture and stock a range of shredder hammer tips.

The standard white-iron cast tips are available in all standard sizes, with a refined grain structure for increased life compared to standard hammers.

Our premium offering includes tri-metallic chrome and tungsten hammers. Ideal for when you want to guarantee the longest possible life in hi-impact hammer applications.

Weld-overlay tungsten carbide grit hammers are locally manufactured and perfected after 40 years of experience at hardfacing for wear resistance.



WEAR BUTTONS

- Industry proven to combat Impact & Abrasion Wear.
- Excellent results on bucket & shovel protection, supports life of ground engaging tools.
- The unique profile of the Button deflects material.
- Ideal for tooth adapter protection & bucket side wall protection.
- Various sizes make them well suited for small & awkward areas requiring wear protection.

GRIZZLY BARS

Chocky blocks are the most popular cast wear product, due to their ease of installation and distinctive shape. Stocked in sizes from 25 to 90mm wide, with 15mm hard surface on 8mm mild steel backing.

Applications include: Fixed & mobile plant, buckets, trays, chutes, crushers and impact plates.



SCREENS

OVERVIEW

- Tungsten carbide weld overlayed screens
- Retain sharp edges for longer
- Also available in lower grades (stainless steel, Q&T plate)
- Manufacture and repair

SUITABLE FOR ALL FLAT SCREENS INCLUDING

Pulpers

Pulper-emptying

Turbo-seperator

Reject-seperator

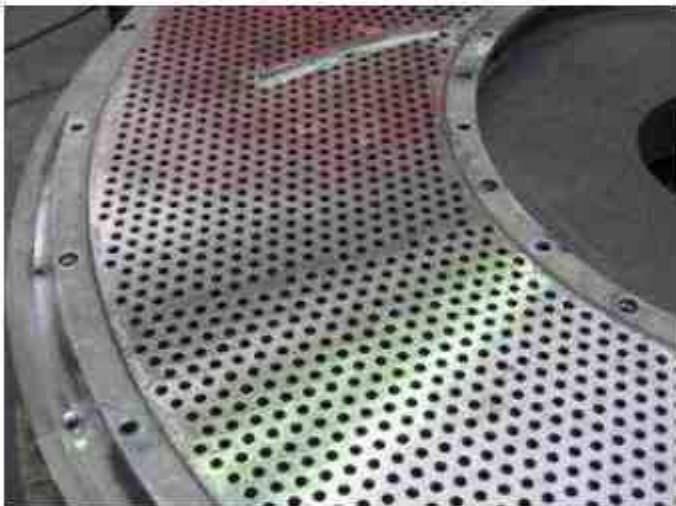
Reject-sorter

Fiberizer

Screw Press

Reject Press

All makes and models



OVERVIEW

- Any size valves (2" – 60")
- Repair and hardfacing
- Stellite coatings
- Tungsten carbide
- Chrome carbide
- Specialise in heavy duty valves
- High temperature applications
- Corrosive environments
- Metal spray, PTA or Laser Cladding options



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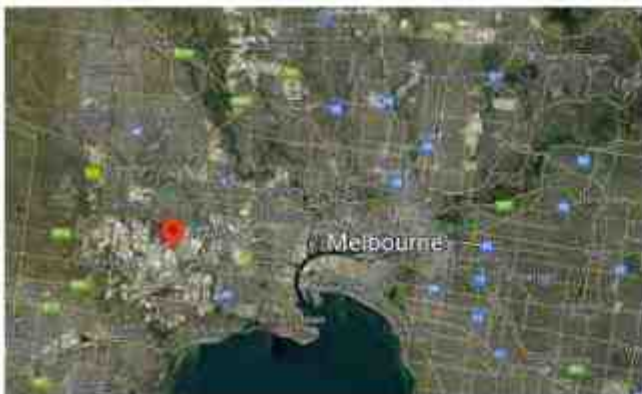
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AWWELD
Leadership in Life Extension