



More than 100 years' experience in finding solutions for your business.

Australian Castolin Eutectic

Consumables and Equipment range

Plasma Spray Equipment and Consumables



Edition September 2014



YOUR RESOURCE FOR PROTECTION, REPAIR AND JOINING SOLUTIONS



ABN 21 060 672 979

TOOWOOMBA WELDING SUPPLIES



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We deliver on time ... EVERYTIME

We are an Australian locally owned family business

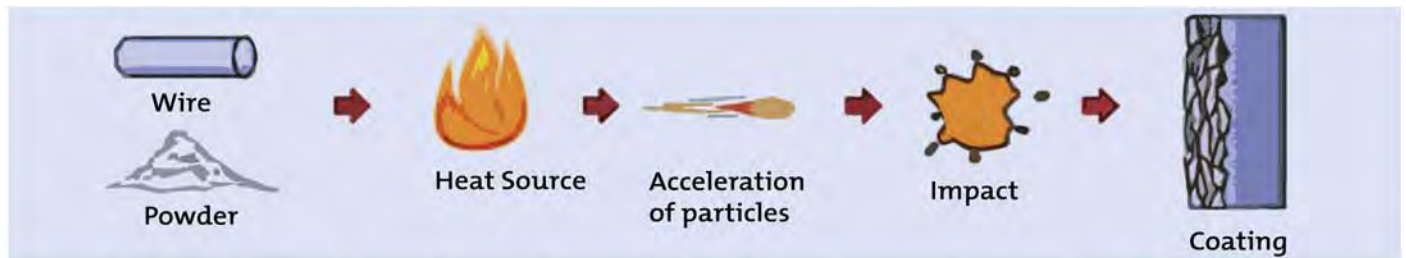


Thermal Spray Introduction

Coating overview

There are many different coating ways to protect against wear, repair and rebuild your parts, each with their respective advantages and constraints. Below you will find simplified overviews of the different coating processes, to get a quick initial choice for your application.

Simplified thermal spray



Coating families	Coating material	Base material	Heating of work-piece	Max coating thickness mm	Coating surface size	Coating structure	Coating micro-porosity	Bonding		Deposition yield	Energy	Equipment investment	
RotoTec	Powder. Metals & polymer	All metals	Low	3 (10)*	Medium to large	Lamellar	5 to 15%	Good. Mechanical & micro-diffusion		Medium to high	Medium to high	Combustion gases	Low
ProXon	Powder. Metals	All metals	Low	2 (5)*	Medium to large	Lamellar	5 to 15%	Good. Mechanical & micro-diffusion		Medium	Medium to high	Combustion gases	Low
Meta-Ceram	Powder. Ceramic	All metals	Low	0,4 (1)*	Medium	Lamellar	5 to 15%	Good. Mechanical & micro-diffusion		Low	Medium	Combustion gases	Low
Eutalloy	Powder. Self-fluxing alloys	Steels, cast iron, (aluminium bronze) *	Medium to high	2 (10)*	Small & precise	Homogeneous	Negligible	Very good. Diffusion		Medium	Medium	Combustion gases	Low
Eutalloy SF	Powder. Self-fluxing alloys	Steels & cast iron	High	2 (6)*	Medium to large	Homogeneous	Negligible	Very good. Diffusion		High	High	Combustion gases	Low
Eutalloy RW	Powder. Self-fluxing alloys	Steels & cast iron	High	2 (6)*	Medium	Homogeneous	Negligible	Very good. Diffusion		Medium to high	Medium to high	Combustion gases	Low
EuTroLoy	Powder or wire. Metals	Steels, cast iron, (aluminium bronze) *	Medium to high	2 (20)*	Large	Homogeneous	Negligible	Excellent. Fusion		Medium to high	High	Electricity & shielding gas	Medium
EuTronic Arc	Wire. Metals	All metals	Low	1 (20)*	Very large	Lamellar	3 to 10%	Good. Mechanical & micro-diffusion		Very high	Medium	Electricity & compressed air	Medium

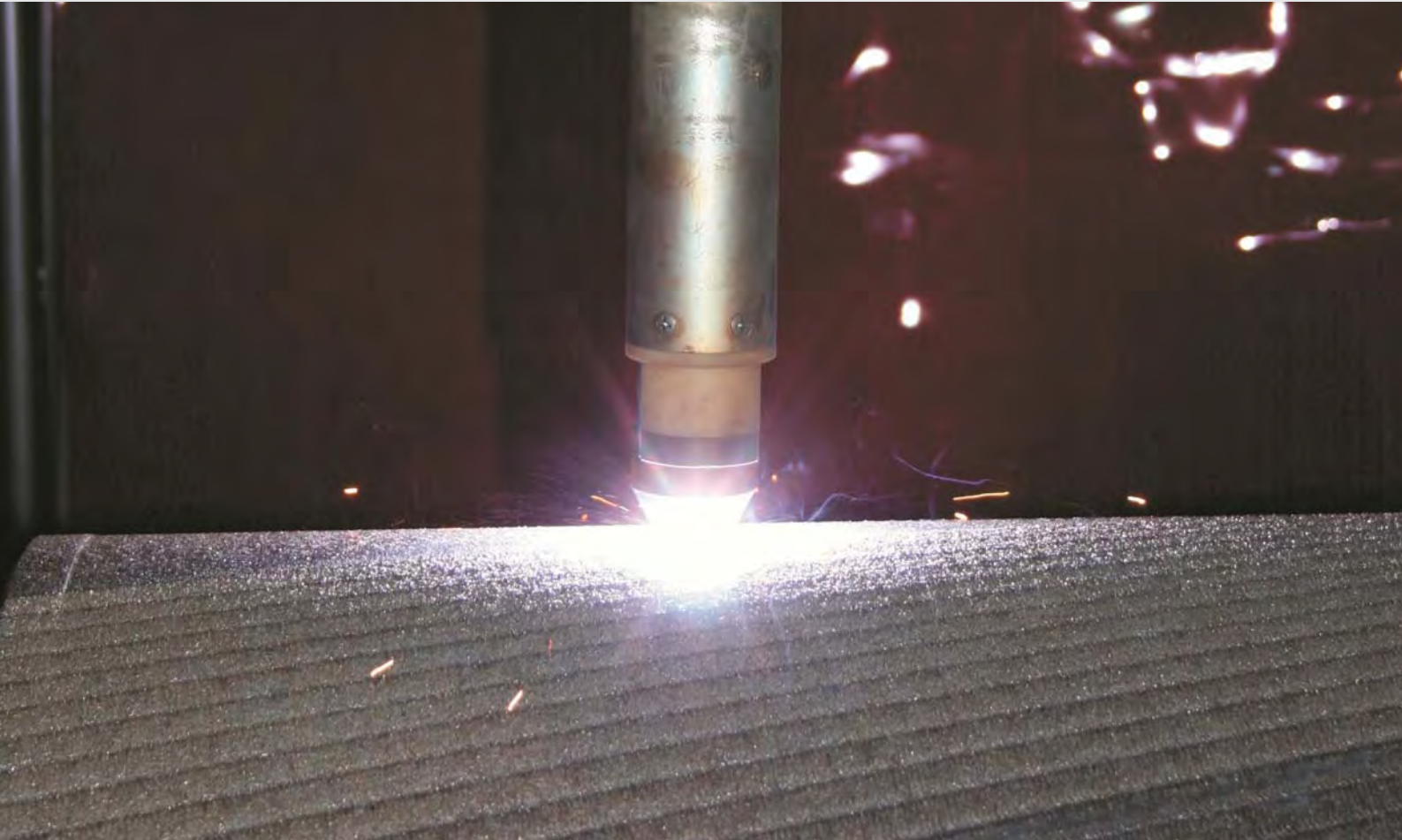
Simplified surfacing polymer overview

Coating families	Coating material	Base material	Heating of work-piece	Max coating thickness mm	Coating surface size	Coating structure	Coating micro-porosity	Bonding	Deposition rate	Deposition yield	Energy	Equipment investment
MeCaTec	Paste or fluid. Polymer	All metals & others	None	10 (20)*	Large	Heterogeneous	Negligible	Good. Chemical	Medium	High	None	Negligible

■ **Best**
■ **Second choice**

(....) * request special precaution or coating material

Plasma Transferred Arc (PTA) Welding



Simplified overview

Coating families	Coating material	Base material	Heating of work-piece	Max coating thickness mm	Coating surface size	Coating structure	Coating micro-porosity	Bonding	Deposition rate	Deposition yield	Energy	Equipment investment
EuTroLoy	Powder or wire. Metals	Steels, cast iron, (aluminium bronze)*	Medium to high	2 (20)*	Large	Homogeneous	Negligible	Excellent Fusion	Medium to high	High	Electricity & shielding gas	Medium



Best

Second choice

(...) * request special precaution or spray powder

Plasma Transferred Arc (PTA) Welding

EuTroLoy® Plasma Transferred Arc Process

Plasma Transferred Arc (PTA)

Function

In the PTA process, the plasma is focused while forced through the heat resistant anode, causing a considerable increase of the arc density, energy and temperature. The filler alloy in powder form is conveyed into the plasma arc column where a shielding gas protects the weld pool from the atmosphere. The plasma arc and the heat input can be far better controlled than a conventional electric arc and the energy is almost completely spent to melt the filler metal, reducing the heat input and dilution to the minimum.

Advantages

PTA technology provides a wide range of benefits compared with conventional arc welding processes:

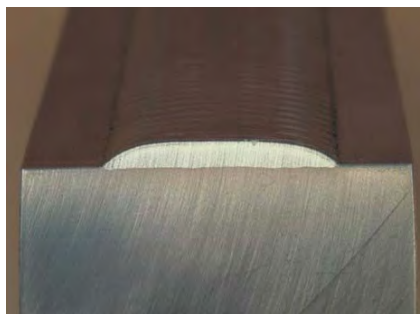
- Lowest dilution, heat input, distortions and HAZ less than any other arc welding process.
- Maximum purity and performance of the coating alloy.
- Extra smooth surface for least post-weld machining.
- Higher bond strength.
- Pore free coating.
- Thicker coatings capabilities.

Applications

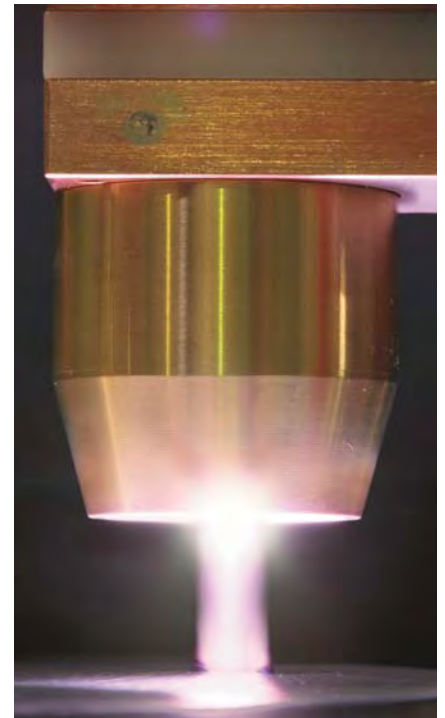
The EuTronic® GAP is the Castolin Eutectic Plasma Transferred Arc (PTA) equipment. GAP is ideal for coating and joining operations. Castolin Eutectic has developed special EuTroLoy powders for applications done with the EuTronic® GAP.



Smooth surface and spatter free Coating.

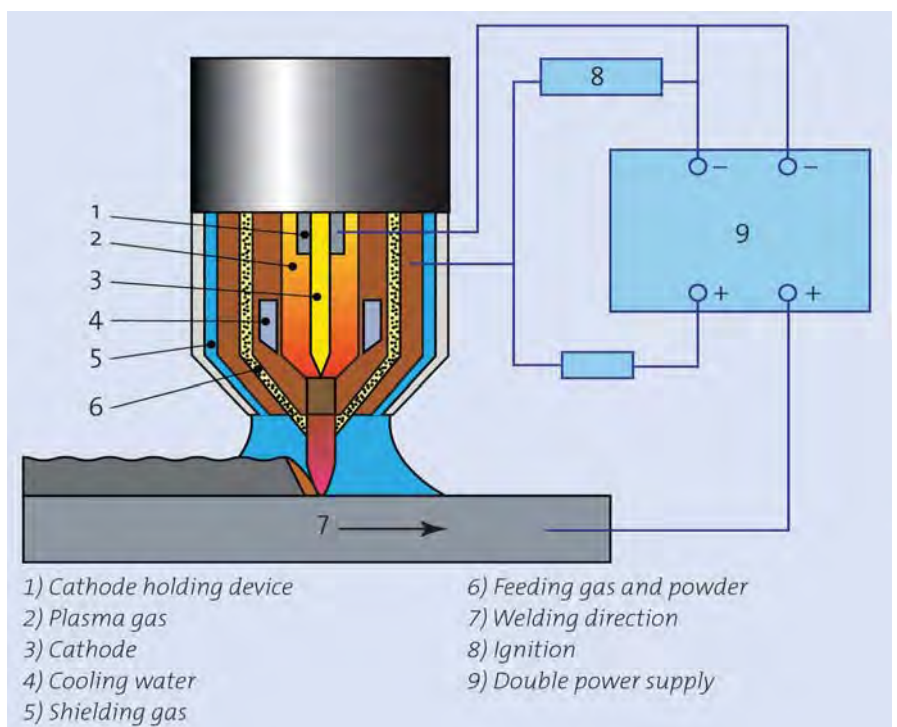


Wear resistant coating with metallurgical bonding and minimum dilution.



Technical data

- Plasma arc temperature: up to 20 000 °C
- Particle velocity: not relevant.
- Deposition rate: 2 to 20 kg/h.
- Coating material: Metals in powder or wire form.
- Coating thickness: 0.1 - 20 mm
- Coating density: 100%
- Noise level: 70 - 80 dB(A)



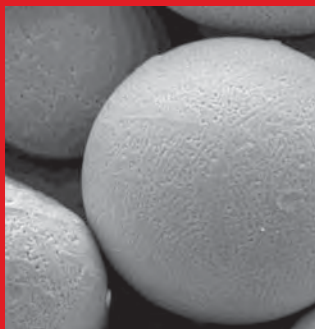
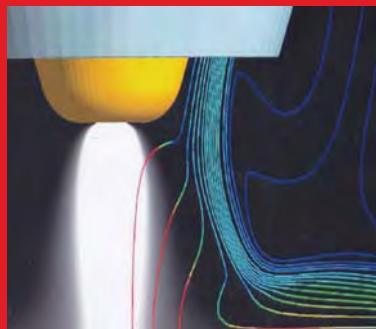
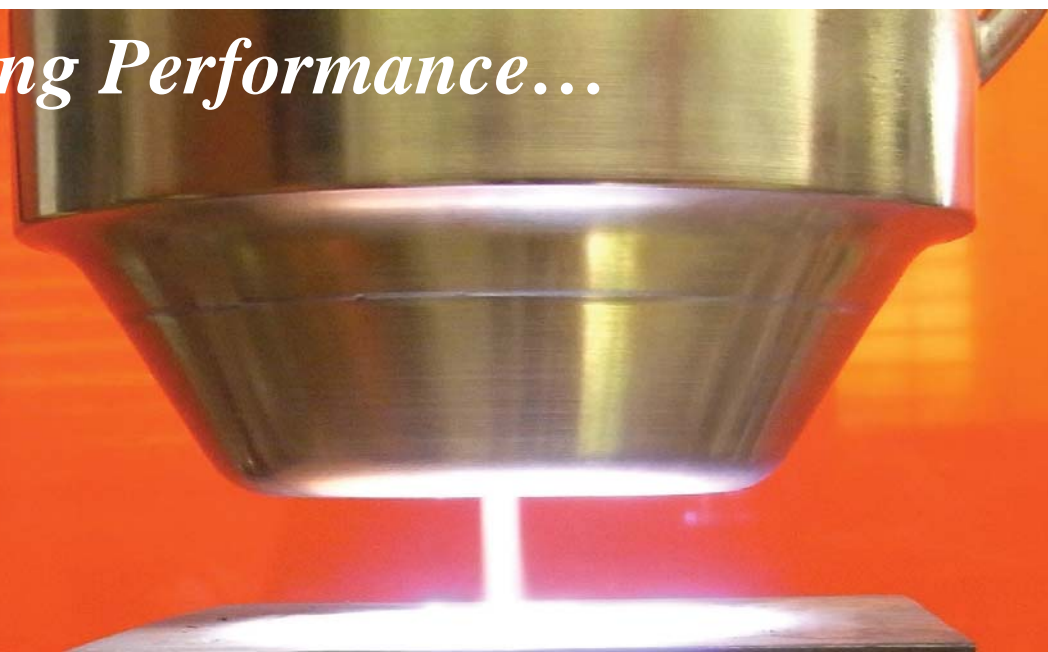
Plasma Transferred Arc (PTA) Welding

EuTronic GAP® PTA Equipment

EuTronic GAP® 4501 DC IMPA

For Heavy industrial applications

Enduring Performance...



PTA process with Highest deposition rate in the World!

Easily transportable unit

Lowest dilution

Up to 20 Kg/hr* deposition rate

Modern, fully automated, friendly user

- Automation interface with analogue and digital inputs and outputs.
- Powerful PLC 72 pin harting plug automated interfaces
- DC power source with HF-ignition
- Plasma welding with 100 memory cells for parameter storage
- Powder coating using powder feeder EP3
- Optional GAP control software package for enhanced control and display of parameters
- Special chiller cooling

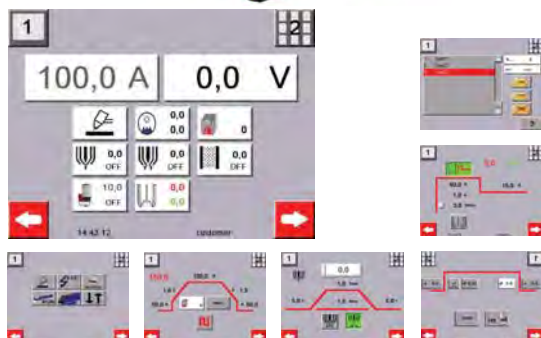
Description	Touch Screen
Voltage supply	3x460V, 60Hz
Power supply	Cable 4x16mm ² , open end
Max power consumption	34kVA
Max. preliminary fuse	63A
Supply frequency	50/60 Hz
Welding current (35%ED / 100%ED)	450A / 300A
Adjustment range	6-450A
Open circuit V main inverter	70V DC
Open circuit V pilot inverter	85V DC
Pilot current (100%ED)	100A
Adjustment range pilot current	3 - 160A
Protection index	IP21S
Dimensions L x W x H (mm)	815x445x785mm
Weight	105 Kg

Deposition rates of up to 20Kg per hour

Plasma Transferred Arc (PTA) Welding

EuTronic GAP® PTA Equipment

EuTronic GAP® 2501 DC Touch Screen



Description GAP 2501	Touch Screen
Voltage supply	3x400 + N ± 10%
Power supply	5X16A CEE plug
Maximum welding current	250 Amps
Welding current (100%ED)	160 Amps
Adjustment range	2—250 Amps
Max power consumption	18 KVA
Open circuit V main inverter	90 V
Open circuit V pilot inverter	100 V
Pilot current (100%ED)	10A
Adjustment range pilot current	Up to 30 A
Protection index	IP 23 S
Dimensions L x W x H (mm)	815 x 445 x 635
Weight	70 Kg

- Plasma welding with powder or wire feed options
- Programmable and Manual settings
- Joining or overlay, plus Keyhole welding
- Many hand held torches or machine torches available
- TIG welding & Cold wire TIG and MMA welding
- Trolley mounting facility
- GAP® 2501DC touch screen
- GAP® 2501DC automation interface suitable for many types of robotic applications
- High deposition (up to 10kg/hr)

EuTronic GAP® 3501 DC



Description GAP 3501	Touch Screen
Voltage supply	3x400 + N ± 10%
Power supply	5x32A CEE plug 6mm2
Supply frequency	50/60 Hz
Welding current (35% / 60%ED)	350 / 320A
Welding current (100%ED)	250A
Adjustment range	6 - 350A
Max power consumption	20 KVA
Open circuit V main inverter	80 V DC
Open circuit V pilot inverter	110 V DC
Pilot current (100%ED)	30A
Adjustment range pilot current	0.5 - 50A
Protection index	IP 21 S
Dimensions L x W x H (mm)	815 x 445 x 635
Weight	75 Kg

- For full automation or manual operations
- Plasma welding
- Powerful PLC 72 pin harting plug automated interfaces (on request)
- 100 memory cells for parameter storage
- Powder coating using powder feeder EP2
- Optional GAP control software package for enhanced control & display of parameters
- Works with cold wire feeder WF
- Hand held and machine torches for both welding and powder coatings
- Easy Touchscreen controls
- PTAW, GTAW and MMAW

Specialist equipment designed to suit your application

Plasma Transferred Arc (PTA) Welding

EuTronic GAP® Accessories



EP 2 Powder feeder

Powder Feeder EP2

The powder feeder EP2 is suitable for GAP 2001, GAP 3001 / 2, Castodyn DS8000 and CastoDyn SF Lance.

Description	Characteristics
Carrier gas	Ar, Ar-H2
Carrier gas flow rate	0 - 4 l/min
Powder reservoir	2 l capacity
Degree of protection	IP 23
Weight (without powder)	7.5 kg
Dimensions L x W x H (mm)	200 x 170 x 470
<ul style="list-style-type: none"> Stepless feeding rate control via feeding wheel speed directly from inverter PLC. Powder feed rate 3-120 g/min, depending on feeding wheel configuration, torch, anode and powder density. Larger powder feeders and additional options are available for EuTronic GAP systems, eg: twin feeders, twin motors for blending options. 	



Cold Wire feeder

Cold Wire Feeder

Suitable for the GAP 2001, GAP 3001 and 3002 series

Description	Characteristics
Degree of protection	IP23
Weight	25 Kg
Dimensions L x W x H (mm)	725 x 230 x 450
<ul style="list-style-type: none"> Drive: efficient four roll drive with 30mm wire feeder rolls, fit in wire feeder for 16 Kg wire coils. Special designed pressure arms care for a smooth and reproducible pressure of the wire onto the feeder rolls within the drive. 	



GAP Cooling unit

Cooling GAP and Cooling GAP Twin

Suitable for the GAP 2001, GAP 3001 and 3002 series

Description	Characteristics
Cooling GAP Weight	40kg
Dimensions L x W x H (mm)	900 x 445 x 360
Cooling GAP Twin Weight	45 kg
Dimensions L x W x H (mm)	900 x 445 x 360
<ul style="list-style-type: none"> Single or twin circuit heat exchangers additional water-water heat exchanger available. Additional water-water heat exchanger available on request. 	



OU and VU Units (Assembled)

GAP Automation and Manipulation accessories.

Suitable for the GAP 2001, GAP 3001 and 3002 series

Description	Characteristics
Oscillation Unit (OU)	Left Right oscillation
Oscillation width	Max 100 to 500 mm
Oscillation speed	0.1 - 60 mm/s
Dwell time	0 - unlimited
Max load	5 Kg
Vertical Unit (VU)	
Max transverse path	100 mm
Oscillation speed	0,1 - 20 mm/s
Max load	10 Kg
Turning Tilting Table TTT200	
Max. load	200 kg
Diameter turntable	400 mm
Continuously tilting range	-110° / +110°
Manual adjustable by hand wheel	Encoder for position feedback



TT200 Table

Plasma Transferred Arc (PTA) Welding

EuTroLoy® Plasma Transferred Arc Powders

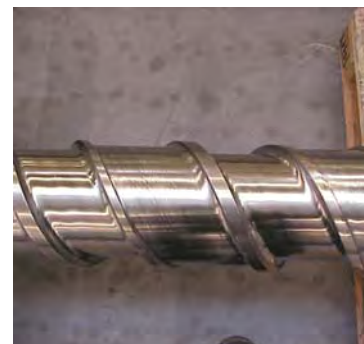


Product	Product Type	Applications / Features	Properties
EuTroLoy® 16006	Alloy Co-Cr-W-Ni-Fe (Gr. 6 Type)	Valve seats, protective shaft sleeves, shaft seal surfaces, tools in the wood and plastic processing industry, stirrer components, valve parts, extruder screws, buffer layer for EuTroLoy® 16001 alloy powders.	~40 HRC High abrasion resistance under pressure and impact stress (cavitation). Heat and corrosion resistant. Low coefficient of sliding metal friction, insensitive to adhesive wear. For operating temperatures up to 750°C.
EuTroLoy® 16008	Alloy Co-Cr-Mo-Ni (Gr. 21 Type)	Calibration matrices for steel forming, hot working tools such as dies and shearing blades, valve seats, seal surfaces of shafts and spindles, pump and turbine parts. Buffer layers for EuTroLoy® 16001, 16006, 16012 alloy powders.	~30 HRC Corrosion, oxidation, heat, cavitation, thermal shock and creep-resistant weld metal. Work hardening. Low coefficient of sliding metal friction, insensitive to adhesive wear. Nonmagnetic, easily machined and polished coatings.
EuTroLoy® 16012	Alloy Co-Cr-W-Ni-Fe (Gr. 12 Type)	Slide valve seats, extruder screws for plastic masses, feed screws for sawdust and hydropulpers in the paper industry, tools in the timber industry, segments of nose rings and clinker cooling plates, tools for the paper, plastics and timber processing industries.	~46 HRC High abrasion resistance under pressure and impact stress (cavitation). Heat and corrosion-resistant. Low coefficient of sliding metal friction, insensitive to adhesive wear. For operating temperatures up to 750°C.
EuTroLoy® 16221	Alloy Ni-Cr-B-Si-Al	Highly suitable for use with molten glass. Mould bottoms, tailstocks, blowheads in cast iron and Cu-Al. Drawing matrices in cast iron, coke oven door. Bonding layer on flake and spheroidal graphite cast iron parts.	~30 HRC Excellent bonding with lamellar and spheroidal graphite grey cast iron, as well as steel. Excellent resistance to heat and thermal shock.
EuTroLoy® 16223	Alloy Ni-Cr-B-Si-Al	Gray cast iron forming tools, gray cast iron and bronze glass moulds, valve and slide valve parts, dies, anti-corrosion hardfacings on gray cast iron workpieces, buffer layers on gray and nodular cast iron.	~34 HRC Good wetting of the base metals. Creep resistant, thermal fatigue resistant and cavitation resistant hardfacings. Low coefficient of sliding metal friction. Good adhesive strength and corrosion resistance. Polishable.
EuTroLoy® 16316	Alloy Fe-Cr-Ni-Mo	Workpieces in the chemical industry and food processing industry and buffer layers for hard-facing.	~170 HV30 Austenitic weld metal with ~9 % -ferrite and low carbon content. Resistant to pitting and intercrystalline corrosion up to temperatures of 400 °C, also scale resistant up to 800 °C. May be polished to a mirror finish.
EuTroLoy® 16454	Self-fluxing Ni base alloy	Hardfacing of seal surfaces in valves, sliding seals and slideways, forming tools, valves, valve flaps, pump rotors, cams and worm screw parts.	~53 HRC Highly creep resistant, heat and corrosion resistant weld metal. Low coefficient of sliding metal friction. High adhesive strength.

Many more powder alloys are available upon request. Please ask your local Representative.

Plasma Transferred Arc (PTA) Welding

EuTroLoy® Plasma Transferred Arc Powders



Product	Product Type	Applications / Features	Properties
EuTroLoy® 16494	Self-fluxing Ni base alloy	GAP welding process, oxidation resistant up to 800°C. Corrosion resistant and has low coefficient of sliding metal friction. High adhesive strength. Typical applications: slide valves for oil and steam, glass making tools, foundry tools,	~39 to 42 HRC 0.4 C, 10 Cr, 1.8 B, 2.7 Si, max 0.2 Fe, Bal Ni. Good resistance to high temperature (800° C) Good metal to metal friction properties
EuTroLoy® 16495	Self-fluxing Ni base alloy	GAP welding process, high temperature oxidation and corrosion resistance. Typical applications: Steam and oil/gas valve shutters, slide valves, pump impellers, wear rings, glass making components.	~50 HRC 0.5 C, 12 Cr, 2.2 B, 3.2 Si, max 0.2 Fe, Bal Ni Good resistance to high temperature oxidation and corrosion, (750°C). Good metal to metal friction properties.
EuTroLoy® 16496	Self-fluxing Ni base alloy	Hardfacing of seal surfaces in valves, sliding seals and slide ways, forming tools, valves, valve flaps, pump rotors, cams and worm screw parts.	~60 HRC 0.7 C, 16 Cr, 3.3 B, 4.2 Si, max 0.3 Fe, Bal Ni Good resistance to high temperature oxidation and abrasion, (700°C). Good friction properties.
EuTroLoy® 16604	Alloy Fe-Co-Cr-Mo	Tools for hot and cold metal shaping: clipping bed, rolling mills, bending machines, sealing joints. Excellent buttering layer before coating with cobalt based alloys.	~45 HRC Work-hardening deposit with very fine martensitic structure. Excellent resistance to heat, thermal shock and corrosion. Good resistance to cracking.
EuTroLoy® 16606	Alloy Fe-W-Cr-Mo-V	Temperature-stressed dies and mandrels, cutting tools, also for natural fibres, punching, compression moulding and drawing dies, forging inserts, worm screw parts, valves, barrel extruders.	~58 HRC Martensitic weld metal based on cold work tool steel. Wear-resistant to abrasion and fatigue stress as well as when subjected to a combination of abrasion and fatigue stress. Hot wear resistant. Good tempering properties. Heat treatable.
EuTroLoy® 16625	Alloy Ni-Cr-Mo-Nb-Fe	Marine engine components, power plant components, installations on drilling rigs, valve components for mineral oil, tools for underwater work and low-temperature equipment.	~210 HV30 High ductility. Very good corrosion resistance (e.g. seawater). Tough at subzero temperatures, suitable for cryogenic use.
EuTroLoy® 16800	Alloy Ni-Mo-Cr-W	Mixer arms, components in the paper industry, hot shears, hot trimming dies, extrusion dies, valve seats, pump components in the chemical industry.	~260 HV30 Very high resistance to inter crystalline corrosion, interfacial corrosion and stress corrosion cracking. Excellent corrosion resistance to oxidising media such as nitric, phosphoric, sulphuric and sulphurous acid. Also resistant to ethanoic, lactic, citric and fatty acids, caustic soda as well as media containing chloride.
EuTroLoy® PG 6503	Ni-B-Si-Fe alloy and tungsten carbide	Dragline bucket wear components, ground engaging tool protection. Decanting and transport screw. Mixer pieces. Drilling tools. Brick or tile dies. Protective sleeves. Wood-working tools.	~60 HRC 60% tungsten carbides. Excellent resistance to abrasion.

Many more powder alloys are available upon request. Please ask your local Representative.

Plasma Transferred Arc (PTA) Welding

EuTronic GAP® Accessories



GAP® E12N manual torch



GAP® E15N manual torch



GAP® E150P manual powder torch



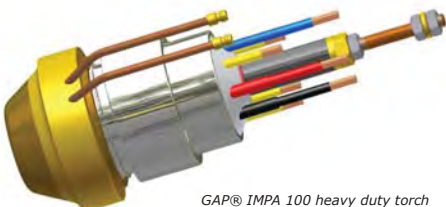
GAP® E54 ID torch (>80mm)



GAP® E52 Auto torch



GAP® E42 Auto torch



GAP® IMPA 100 heavy duty torch

GAP E12N

Hand held (manual) torch without powder. Used for accurate fusion welding via PTA

Description	Characteristics
Max current at 100%	100A
Weight with hose pack	1.9 kg (4m)
<ul style="list-style-type: none"> Liquid cooled manual torch, available also with 70° and 180° neck Hose pack: 4 metres; longer hose packs on request. Cold wire holder available as option. 	

GAP E15N

Hand held (manual) torch without powder. Used for accurate fusion welding via PTA

Description	Characteristics
Max current at 100%	150A
Weight with hose pack	2.5 kg (4m)
<ul style="list-style-type: none"> Liquid cooled manual torch, available also with 70° and 180° neck Hose pack: 4 metres; longer hose packs on request Cold wire holder available as option. 	

GAP E150P

Hand held (manual) with powder. Used for manual powder welding via PTA

Description	Characteristics
Max current at 100%	150A
Weight with hose pack	2.0 kg (3m)
<ul style="list-style-type: none"> Liquid cooled manual torch, 3mt and 4mt available. Powder flow rate 5-20 g/min. Ideal for small jobs or repairing automated deposits 	

GAP E54S—M—D—DL

Internal Diameter Torch

Description	Characteristics
Max current at 100%	200A
Powder flow rate	10-40 g/min
<ul style="list-style-type: none"> Powder machine torch for inner coatings of parts with diameter > 80mm Hose pack: 4 metres; longer hose packs on request (6mt, 8mt, 10mt all built to order) Available in four different lengths (models): 330(S), 550(M), 920(D) and 1770(DL)mm 	

GAP E52

Standard torch designed for Automated applications

Description	Characteristics
Max current at 100%	200A
Powder flow rate	3-80 g/min
<ul style="list-style-type: none"> Liquid cooled powder machine torch for general applications Cold wire holder available Hose pack: 4 metres; longer hose packs on request (6mt, 8mt, 10mt all built to order) 	

GAP E42

Medium deposition torch designed for Automated applications

Description	Characteristics
Max current at 100%	200A
Powder flow rate	3-140 g/min
<ul style="list-style-type: none"> Liquid cooled powder machine torch for general applications Cold wire holder available Hose pack: 4 metres; longer hose packs on request (6mt, 8mt, 10mt all built to order) 	

GAP IMPA 100

High deposition torch designed for large Automated applications

Description	Characteristics
Max current at 100%	400A
Powder flow rate	Approx max 370 g/min
<ul style="list-style-type: none"> Liquid cooled powder machine torch for heavy duty applications Built on request: Please ask your local Castolin Representative, Smenco Pty Ltd 	

Additional Products



Solution R104

Protective shielding/masking compound. Shields metal surfaces during powder metal spraying.

Description	Characteristics
Brush on liquid compound for masking metal parts during metal spraying. Suitable for SuperJet and RotoTec applications.	Non stick solution 400gram Pack
Cover all areas of part which may be exposed to powder metal overspray. After spraying is completed, wash or wire brush the protective compound. Unwanted metal particles adhering to the compound areas are removed when washed or wire brushed off, leaving clean, unsprayed surfaces.	

Extra Hands

Heat resistant material for insulating and positioning parts when welding/brazing.

Description	Characteristics
Easy to use, adheres to most surfaces Withstands elevated temperatures	Reusable 1650°C (3000°F)
Packaging	2.27kg Pail
Easily holds or positions small and difficult-to-align parts for welding, brazing or soldering. Can be used as a heat sink to absorb heat and avoid surface discolouration on heat sensitive parts. Can also be used as a heat dam to prevent heat from travelling to areas that can be damaged by heat, such as seals, gaskets, glass and wiring. Prevents discolouration on metals such as stainless steel.	

Eutectic Instant Hardener 75

Case hardening compound

Description	Characteristics
Case hardening powder compound Easy to use and safe.	Cyanide free
Packaging	2.27 kg
Eutectic Instant Hardener #75 is a cyanide-free hardening compound for case hardening tools, harrowing & furrowing farm implements, and case hardening soft materials such as mild steel for improved wear performance.	

Eutectic SealTec

Low Temperature Wax sealer for cold spray coatings

Description	Characteristics
Easy to use and safe.	
Packaging	0.45 kg
A deeply penetrating, non-toxic wax sealer. Recommended for sealing thermal coatings when the service temperature is below 190°F.	

Bloc-It

Heat absorbing paste

Description	Characteristics
Easy to use and safe.	Non toxic
Packaging	0.283 kg (10 Oz)
Effectively absorbs surface heat and protects adjoining surfaces that may be damaged by excessive heat. Safe to use: non-toxic, no asbestos, harmless to skin, and odourless. Easy to clean: wipe off with cloth or wash with water. Leaves no stains. Key applications: protects rubber, plastic, distortion, painted, and finished surfaces during soldering, brazing or welding.	



Smenco Pty Ltd,

100% Australian company proudly promoting **Castolin Eutectic**.
World wide solutions with local support through our many regional offices and
Distributor network.

Your local distributor is:

ABN 21 060 672 979

TOOWOOMBA WELDING SUPPLIES



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We deliver on time ... EVERYTIME

We are an Australian locally owned family business



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