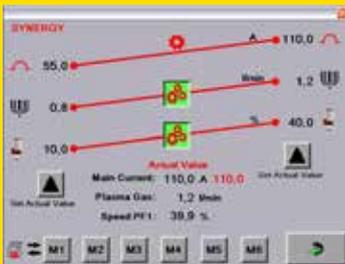


Plasma Transferred Arc Welding

# EuTronic® GAP 3511 Synergic

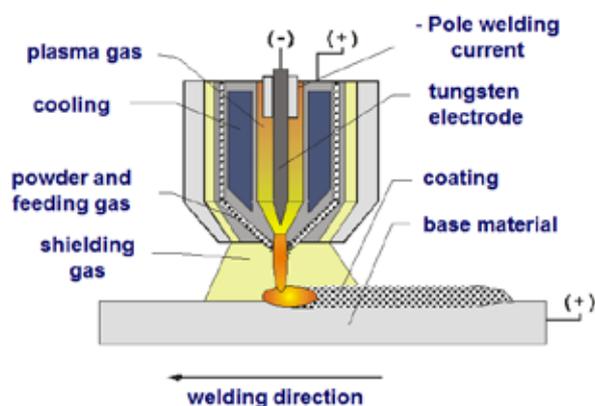


- Plasma welding, TIG welding, MMA welding
- For joining, coating and brazing
- Synergic lines available
- User friendly touch screen control panel
- Spot/Impulse welding mode
- Versatile and flexible due to the modular construction



WELDING

## Why EuTronic® GAP 3511 DC Synergic



### The EuTronic® GAP 3511 DC Synergic is the choice for automated and manual applications

The EuTronic® GAP 3511 DC Synergic is ideal for welding applications that require precision and high deposit quality. The welding unit is available with various features. A user friendly 8,4" touch screen control panel with a user-friendly interface allows the operator a simplified and even faster preselection of the welding parameters with welder gloves.

The EuTronic® GAP 3511 DC Synergic has been designed for integrations in automated process and manual operation. Newly added functions like synergic mode or impulse welding allows for even more precise control of the welding process.

All the settings are displayed on the touch screen and up to 1000 memory locations are available for saving the welding parameters. The extremely powerful inverter delivers 10 ÷ 350A which is sufficient for almost all powder applications.

Various optional features are available for the EuTronic® GAP 3511 DC Synergic such as fully electronic gas control, second motor control card to operate a second powder feeder and an extended automation interface for a fully integration in an automated process.



Focused plasma arc allows extra control, that results also in low dilution, smooth surface coatings and spatter-free welding beads: rework and welding material costs are minimised.

With all these advantages, the GAP process is designed for work that requires extra precision, low heat generation and minimal distortion. The GAP technology also provides an exceptionally high purity and quality of the welding bead from the very first layer.

In conjunction with the high efficiency of the process, the precise control of the layer thickness and the smooth weld beads, these advantages generate considerable economies by cutting both operating costs and welding consumable requirements.

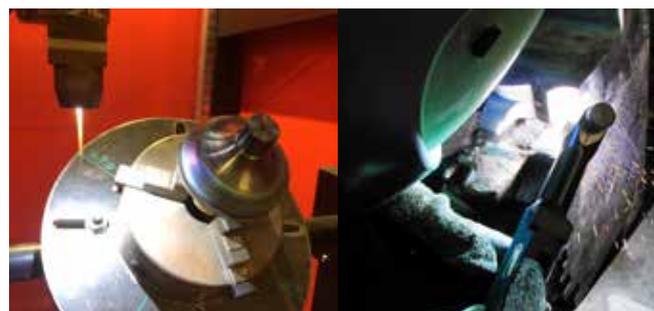
Castolin Eutectic introduced the Plasma Transferred Arc (PTA) process under the brand name EuTronic GAP (Gas Arc Process) to the welding market in 1972. Since that time a lot of developments took place.

Starting with Plasma Powder Technology for coating applications, Castolin has now nearly all different plasma processes in its range. Plasma coating as well as joining and brazing applications.

In the GAP process, the plasma is focused while forced through the heat resistant anode, causing a considerable increase of the arc density, energy and temperature.

PTA process can be started by preliminary use of inner pilot arc. The pilot arc is burning between the gas cooled cathodic tungsten electrode and liquid-cooled anodic copper nozzle.

The welding filler alloy, in gas atomized powder or cold wire form is conveyed into the weld pool where the shielding gas protects it 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.



### The GAP technology offers a wide range of benefits compared with conventional arc welding processes:

Major factors are:

- High energy density in an extremely focussed arc
- High deposition rates for shorter welding times
- Homogeneous, porosity and spatter free coatings
- Dilution, heat input, distortion and heat-affected zones are lower than for any other arc welding process
- Maximum purity and performance of the applied alloy even in the first layer
- Possible multipass overlays
- Smoother surface for less rework
- Precise control of the weld deposit thickness
- Exceptionally good reproducibility
- Optionally suitable for fully automated processes



EuTronic GAP® 3511 Synergic	ESC: 763890
Supply voltage:	3x 400V ±10% 3x 460V ±5%
Supply frequency:	50/60 Hz
Supply fuse:	32 A
Max. power consumption:	20 kVA
Maximum rated value of the power supply current	32 A
Effective value of the maximum power supply current	25 A
Cos phi:	0.99
Max. welding current (35% ED):	350 A
Max. welding current (60% ED):	280 A
Max. welding current (100% ED):	250 A
Pilot current (100% ED):	30 A
Amperage range for plasma and TIG welding	10 A ÷ 350 A
Amperage range for electrode welding	10 A ÷ 280 A
Amperage range for pilot current	2 A ÷ 50 A
Open Circuit Voltage - pilot inverter:	95 V DC
Open Circuit Voltage - main inverter:	95 V DC
Dimensions (L x W x H):	815 x 445 x 635 mm
Weight:	105 kg

**Application-oriented**

Castolin Eutectic develops and manufactures GAP welding units and accessories in various designs and sizes, as both standard and special models. Our technical team can develop the most cost-effective solution tailored to your practical application. From the power source, through feed/transport equipment and welding torches, up to and including handling devices or robots – we will take care of all the details. Let yourself be surprised by our specialists - we never talk about products, but about applications and solutions that will meet your needs and your requirements.

**Application examples:**

- Repairs on tool steels, rebuilding of cutting edges, forging, stamping dies, aluminium die casting moulds
- Repairs on cast iron, glass moulds
- Feeding screws repairs
- Hard-facing on drilling tools, valve seats and valves, mining machinery, milling tools



### Equipment and Accessories for every application

The EuTronic® GAP 3511 DC, due to its modular design, can be adapted to any application just choosing the right accessories.

Mentioned below is an abstract of the available equipment and accessories.

Additional equipment, accessories and PTA torches can be developed on request.

<b>Powder Feeder EP2</b>	<b>ESC: 260229</b>
Carrier gas:	Ar, Ar-H2
Carrier gas flow rate:	0 - 4 l/min
Powder reservoir:	2 l capacity
Protection class:	IP 23
Weight (without powder):	7,5 kg
Dimensions (L x W x H):	200 x 170 x 470 mm
Powder feed rate 3 - 120 g/min, depending on feeding wheel configuration, torch, anode and powder density.	



<b>Cooling GAP®</b>	<b>ESC: 260058</b>
Weight:	40 kg
Dimensions (L x W x H):	900 x 445 x 360 mm
Cooling with air/water heat exchanger.	



<b>RC-H manual remote control</b>	<b>ESC: 260231</b>
including 8 metres connecting cable.	



<b>Cooling GAP® Chiller</b>	<b>ESC: 754273</b>
Weight:	50 kg
Dimensions (L x W x H):	915 x 445 x 400 mm
Cooling with integrated chiller.	



<b>GAP E 150 P</b>	
Type of torch:	Powder manual torch
Construction:	Hand-held 70° torch
Max. current at 100% duty-cycle:	150 A
Powder flow rate *:	5 - 20 g/min
Cooling:	Liquid
Weight with hose pack:	2 kg (3 m)
ESC code 3 m hose pack:	ESC 260434 (3 m)
ESC code 4 m hose pack:	ESC 260435 (4 m)
* Max feeding rate depending also on powder density, powder feedersettings and type of anode.	



<b>Trolley</b>	<b>ESC: 260056</b>
Weight:	45 kg
Dimensions (L x W x H):	1.190 x 740 x 1.415 mm
Holds gas cylinders, powder feeder, power source and cooler.	



<b>GAP E 52</b>	
Type of torch:	Powder machine torch
Construction:	Vertical
Max. current at 100% duty-cycle:	200 A
Powder flow rate *:	3 - 80 g/min
Cooling:	Liquid
Weight with hose pack:	4,8 kg (4 m)
ESC code 4 m hose pack:	ESC 400204 (4 m)
* Max feeding rate depending also on powder density, powder feedersettings and type of anode.	



<b>GAP E 54</b>	
Type of torch:	Powder machine torch
Construction:	Horizontal
Max. current at 100% duty-cycle:	200 A
Powder flow rate *:	3 - 140 g/min
Cooling:	Liquid
Weight with hose pack:	3,7 kg (4 m)
ESC code 4 m hose pack:	ESC 400861 (S)
ESC code 4 m hose pack:	ESC 402272 (M)
Powder machine torch for inner coatings of parts with diameter > 80 mm.	
Available in four different lengths (models): 330 (S), 550 (M), 920 (D) and 1770 (DL) mm.	
* Max feeding rate depending also on powder density, powder feedersettings and type of anode.	



### Eutectic PTA consumables

Eutectic Castolin manufactures and offers a wide and complete range of alloys, available in different forms, that covers almost every application and any plasma welding process:

- Microatomised Ni, Co, Fe or Cu based powders for wear resistant coatings
- Solid and flux cored wires for cold wire plasma welding

Ask your local Eutectic Castolin representative for more information.



## Your resource for protection, repair and joining solutions