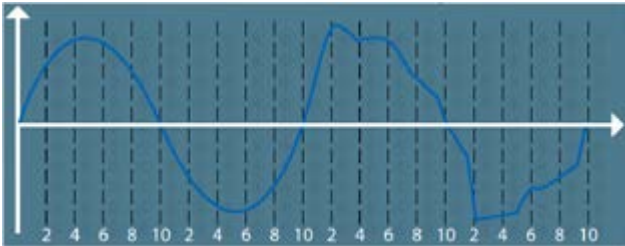


## SAW / MAG-POWER SOURCES DC / AC

High-performance power sources & process control for submerged arc welding and MAG



Submerged arc welding AC technology with modifiable wave modulation, including in zero crossing

### Efficient optimisation of the welding process and seam geometry by zero crossing modulation (plasma pressure).

- Modulated sine with modified, arbitrary wave modulation, predefined zero crossing
- 10 points per half-wave are freely programmable
- Variable selection of the alternating current frequency
- Synchronisation of the AC power source from 0-1800 phase angle adjustable in degree increments
- Synthesised static and dynamic characteristics
- Lossless representation of internal resistance and inductance
- High-frequency-free re-ignition after zero crossing
- Physically variable adjustable waveform (sine to square)
- Voltage feedback from the wire / contact tube touch point
- Differentiated generator characteristics ignition/operation/terminal crater

### Maximum modularity

Optimum process control at all times due to freely selectable power source characteristics

## BENEFITS OF THE ELMA-TECH PROCESS-TECHNOLOGIE

Optimum current modulation for higher process speeds with better welding quality in all UP / MAG process phases!

### CONTROL

Active process development in respect of dynamics and throttling effect in each process phase on the basis of digitally adjustable physical variables. Digital selection of the constant current CC or constant voltage CV power source characteristics.

### CONFIGURATION

#### Primary circuit

Robust mains transformer designed for self-cooling. High-power silicon rectifier for provision of the DC link voltage.

#### Secondary circuit

Modular power units each has its own power sensor for flexible power variables. Mains voltage-independent, identical configuration. Constant current and voltage behaviour in every system.

### COMMUNICATION

Unrestricted automation with regard to PLC communication. Handling of all fieldbus and communication tools for customised system implementation. On-screen control or external control panel.

### ENERGY CONSUMPTION

Efficiency at over 90%.

30% lower energy consumption as compared to conventional power sources combined with significantly lower line harmonic distortions.

## HIGH-PERFORMANCE INVERTER POWER SOURCES



DC 1000 A  
DC 1500 A  
DC 3000 A  
AC 900 A  
AC 1200 A

### High-performance power sources

SAW / MAG

ELMA SAW / MAG 1500  
ELMA SAW / MAG 3000  
ELMA SAW / MAG 1200 AC

### OPTIMUM MEASUREMENT OF THE PROCESS VOLTAGE BY SENSE LINE (DC & AC OPERATION)

Measurement of the wire tension in the contact tube improves process stability by eliminating the contact resistance.

In practice, this method of recording the process voltage contributes to far more precise control intervention. All connection lines and contact resistors are hidden.

This undistorted access to the process events means that control of the arc is smoother and more consistent.

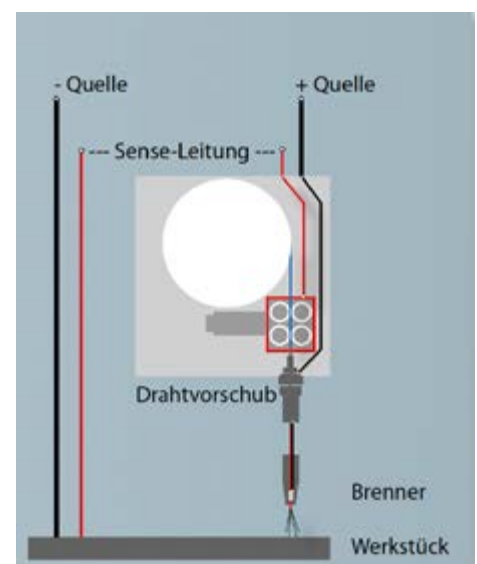
### ROBUST IN USE, PRECISELY ADJUSTABLE!

The secondary-switched power unit has the following advantages over primary-switched power units:

- Galvanic isolation of the power source from the mains
- Wide mains voltage range
- Air-cooled
- Flexible input voltages for worldwide deployment; the power units always have the same configuration without series transformer (3x 208 V, 3x 380 V, 3x 400 V, 3x 460 V, 3x 575 V; 50/60 Hz)
- Safer and more robust due to lower DC voltage at the power unit (90 V DC) compared to primary-switched (580 V DC at 400 V mains)
- Residual ripple in submerged arc operation (constant current <0.1%)

### GENERAL FEATURES

- The SAW systems are all characterised by high resilience
- Each system type can be customised and equipped to meet specific power requirements.
- Secondary-switched power sources, modular switch cabinet configuration with small footprint and flexible power variables.



## PROCESS TECHNOLOGY FROM ELMA-TECH

### Selected technical data

	ELMA SAW/ MAG 1200 AC	ELMA SAW/ MAG 1500	ELMA SAW/MAG 3000
<b>Load current connection</b>			
Infinitely variable setting range	50 A / 20 V - 1200 A / 44 V	50 A / 20 V - 1500 A / 44 V	50 A / 20 V - 3000 A / 44 V
Continuous load (100% ED)	1200 A / 44 V	1500 A / 44 V	3000 A / 44 V
Open circuit voltage	ca. 85 V	ca. 95 V	ca. 95 V
Connection line per connection	3 x 120 mm <sup>2</sup> Cu	3 x 120 mm <sup>2</sup> Cu	3 x 120 mm <sup>2</sup> Cu
<b>Three-phase power supply 2 x</b>			
Mains voltage	3 x 500 V at 50 / 60 Hz	3 x 500 V at 50 / 60 Hz	3 x 500 V at 50 / 60 Hz
Continuous power	66 kVA	83 kVA	2 x 83 kVA
Continuous current	76 A	102 A	2 x 102 A
Performance factor cos. phi.	0,9	0,95	0,95
Power factor Mains fuse (slow-blow)	80 A	120 A	2 x 120 A
Efficiency	>90 %	>90 %	>90 %
Mains connection cable	4 x 50 mm <sup>2</sup> Cu	4 x 50 mm <sup>2</sup> Cu	8 x 50 mm <sup>2</sup> Cu
Dimensions H x B x T	2000 x 800 x 600 mm	2000 x 800 x 600 mm	2 x 2000 x 800 x 600 mm
Weight	580 kg	580 kg	2 x 580 kg
Cooling air requirement	ca. 1 m <sup>3</sup> / sek.	ca. 1 m <sup>3</sup> / sek.	ca. 1 m <sup>3</sup> / sek.
Protection class	IP 20	IP 20	IP 20
Cooling method	AF	AF	AF
Insulation class	H	H	F
Residual ripple operation	Constant current < 0,1 %	Constant current < 0,1 %	Constant current < 0,1 %
Heat exchanger additional	-	-	-
<b>Application</b>	SAW AC / MAG	SAW / MAG	SAW / MAG

Subject to technical and substantive alterations.

We will be pleased to advise you, to develop solutions for your specific applications and to provide support during all phases of your project. Of course, we will also be on site during commissioning so as to guarantee the smooth functioning of your wire arc spraying application. Please direct any questions to our sales team!