



Thermal coating

Effective surface technology in the area of arc wire spraying & plasma coating

Maximum flexibility through fully customizable spray processes



Constant arc even at the lowest voltages and optimum melting behaviour

Advantages of ELMA-Tech process technology

Control

Complete control of all phases of coating and spray processes by means of process control *Virtual Machine* VM3, additional controllers are not required.

Significantly higher control intervention sequence of over 5 kHz compared to conventional current sources with max. 300 Hz. All process parameters are recorded 20,000 times per second.

Active process development with regard to dynamics and throttling effect in each process phase on the basis of digitally adjustable physical quantities. Digital selection of the current source characteristic constant current CC or constant voltage CV.

Stable, constant arc even at a power of only 10 amps guaranteed!

Assembly

Primary circuit

Robust mains transformer, designed for self-cooling. High-performance silicon rectifier to provide the DC link voltage.

Secondary circuit

Modular power units, each with its own current sensor for flexible power ratings. Identical design independent of mains voltage. Current and voltage constant behaviour in every system.



Energy consumption

Efficiency at over 90 %.
30 % less energy consumption compared to conventional power sources, combined with significantly lower grid perturbations.

Process control *Virtual Machine* (VM3)

Communication

Unrestricted automation capability with regard to communication with a PLC. Handling of all fieldbus and communication tools for customer-specific system implementation. Screen control or external operating panel.

This unique process control system with permanent control of even the most discrete process sections offers many applications completely new perspectives for the quality of layer thickness, layer structure and adhesion.

Current further developments: Arc wire spraying with DC pulse / AC pulse

Together with renowned German research institutes, ELMA-Tech is working on the further development of its own spraying technologies. The latest research results from 2018 confirm the improved process properties when DC pulse is used in arc wire spraying (LDS).

The use of pulsed direct current in arc wire spraying under an ELMA-Tech process control offers the following advantages:

- Increase of the melting rate / coating rate
- Reduction of the thermal load of the substrate by lowering the process temperature
- Production of homogeneous and pore-minimized layers
- Very precisely controllable particle separation
- Lower process emissions



High performance inverter power sources

Robust in operation,
precisely adjustable!



High performance power sources

Arc wire spraying

VARIO LDS 300
VARIO LDS 400
VARIO LDS 800 (C, L, W)
VARIO LDS 1500
VARIO LDS 3000

Plasma coating

VARIO TS 340
VARIO TS 340 Sputter
VARIO TS 500 / 200
VARIO TS 670
VARIO TS 800 / 200
VARIO TS 1000

- * VARIO TS 1500 DC
- * VARIO TS 2000 DC
- * VARIO TS 3000 DC

General features

- The plasma systems are characterised by high load capacity, as the process intervals in the applications can last up to 5 hours.
- Each system type can be customized (relays, fuses) and equipped to meet specific performance requirements.
- All applications are controlled by the *Virtual Machine* VM3 process control.
- * These systems are suitable for the following fields of application: Arc wire spraying, welding (e.g. submerged arc welding), annealing.
- Secondary switched power sources, modular control cabinet design with low space requirements and flexible power ratings.

The secondary switched-mode power section has the following advantages over primary switched-mode power sections:

- Galvanic isolation of the power source from the grid
- Wide mains voltage range
- Flexible input voltages for worldwide use with always the same design of the power units without ballast transformer (3x 208 V, 3x 380 V, 3x 400 V, 3x 460 V, 3x 575 V ; 50/60 Hz)
- More robust and safer due to lower DC voltage at the power section (90 V DC) compared to primary switched mode (approx. 580 V DC at 400 V mains)



Perfect control of
thermal spraying

Selected technical data

	VARIO LDS 400 DC	VARIO LDS 800 DC	VARIO TS 1500 DC	VARIO TS 3000 DC
Load current connection				
Adjustment range infinitely variable	10 A - 400 A / 10 V - 44 V	10 A - 400 A / 10 V - 44 V	50 A - 1500 A / 20 V - 44 V	50 A - 3000 A / 13 V - 44 V
Permanent load (100% ED)	315 A / 44 V	500 / 60 V	1500 A / 44 V	3000 A / 44 V
Open-circuit voltage	75 - 80 V	75 - 80 V	ca. 95 V	ca. 95 V
Connection cable per connection	1 x 95 mm ² Cu	1 x 120 mm ² Cu	3 x 120 mm ² Cu	3 x 120 mm ² Cu
Three-phase mains connection				
Mains voltage	3 x 400 V 50 Hz	3 x 400 V 50 Hz	3 x 500 V 50 Hz	3 x 500 V 50 Hz
Permanent power	14,6 kVA	38 kVA	83 kVA	2 x 83 kVA
Continuous current	21,1 A	55 A	102 A	2 x 102 A
Power factor cos. phi.	0,95	0,95	0,95	0,95
Fuse (slow-blow)	25 A	63 A	120 A	2 x 120 A
Efficiency	>90 %	>90 %	>90 %	>90 %
Mains lead	4 x 10 mm ² Cu	4 x 16 mm ² Cu	4 x 50 mm ² Cu	8 x 50 mm ² Cu
Dimensions H x W x T	980 x 480 x 900 mm	1600 x 800 x 500 mm	2000 x 800 x 600	2 x 2000 x 800 x 600
Weight	120 kg	300 kg	580 kg	2 x 580 kg
Cooling air requirement			ca. 1 m ³ / sek.	ca. 1 m ³ / sek.
Protection	IP 23	IP 55	IP 20	IP 20
Cooling method	AF	AF	AF	AF
Isolation class	H	H	F	F
Residual ripple - operation	Constant current <0,1 %	Constant current <0,1 %	Constant current <0,1 %	Constant current <0,1 %
Heat exchanger (additional)	Possible	Possible	Possible	Possible
Process control	VM3	VM3	VM3	VM3
Applications	Arc wire spraying	Arc wire spraying	Arc wire spraying / SAW / Annealing / MAG	Arc wire spraying / SAW / Annealing / MAG

Process technology from ELMA-Tech. The welding process-Versteher.



We will be happy to advise you, develop solutions for your special applications, accompany your project through all phases and, of course, are also on site during commissioning to guarantee the smooth functioning of your arc application. If you have any questions, please contact our sales department!

Subject to technical and content changes.