

THERMAL SPRAYING

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

Maximum flexibility

Constant arc and optimum gun feed performance - even at ultra-low voltages

BENEFITS OF THE ELMA-TECH PROCESS TECHNOLOGY

Our unique process control offers many applications completely new perspectives in terms of the quality of layer thickness, layer structure and adhesion.

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 or constant voltage 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). 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

LDS with DC pulse / AC pulse



LDS with DC-pulse / AC-pulse

ROBUST IN USE, PRECISELY ADJUSTABLE!

ELMA-Tech cooperates with renowned German research institutes on the advancement of the proprietary injection moulding technologies. The latest research results from 2018 demonstrate the improved process properties when using DC pulse for wire arc spraying (LDS).

The use of pulsed direct current in wire arc spraying in conjunction with an ELMA-Tech process control system offers the following

Benefits:

- Higher gun feed rate / application rate
- Reduction of the thermal load on the substrate by lowering the process temperature
- Creation of homogeneous, pore-minimised layers
- Targeted particle separation
- Lower process emissions

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
- 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)

GENERAL FEATURES

- The plasma systems are characterised by high resilience
- Each system type can be customised (relay, fuses) and equipped to meet specific power requirements
- These systems are suitable for the following areas of application: wire arc spraying, welding (e.g. submerged arc welding), annealing. Secondary-switched power sources, modular switch cabinet configuration with small footprint and flexible power variables.

High-performance power sources

Wire arc spraying

VARIO LDS 300
 VARIO LDS 400
 VARIO LDS 800 (C, L, W)
 VARIO LDS 1500
 VARIO LDS 3000
 VARIO TS 1500 DC
 VARIO TS 2000 DC
 VARIO TS 3000 DC

Plasma coatings

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

PROCESS TECHNOLOGY FROM ELMA-TECH

Selected technical data

| | VARIO LDS 400 DC | VARIO LDS 800 DC | VARIO TS 1500 DC | VARIO TS 3000 DC |
|-------------------------------------|----------------------------|----------------------------|-----------------------------|-----------------------------|
| Load current connection | | | | |
| Infinitely variable setting range | 10 A - 400 A / 10 V - 44 V | 10 A - 800 A / 10 V - 44 V | 50 A - 1500 A / 20 V - 44 V | 50 A - 3000 A / 13 V - 44 V |
| Continuous 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 line 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 power supply | | | | |
| Mains voltage | 3 x 400 V 50 Hz | 3 x 400 50 Hz | 3 x 400 V 50 Hz | 3 x 400 V 50 Hz |
| Continuous 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 |
| Performance factor cos. phi. | 0,95 | 0,95 | 0,95 | 0,95 |
| Power factor Mains fuse (slow-blow) | 25 A | 63 A | 120 A | 2 x 120 A |
| Efficiency | >90 % | >90 % | >90 % | >90 % |
| Mains connection cable | 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 B x T | 980 x 480 x 900 mm | 1600 x 800 x 500 mm | 2000 x 800 x 600 mm | 2 x 2000 x 800 x 600 mm |
| 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 class | IP 23 | IP 55 | IP 20 | IP 20 |
| Cooling method | AF | AF | AF | AF |
| Insulation 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 |
| Application | LDS | LDS | LDS / UP / annealing / MAG | LDS / UP / annealing / 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!