

PERFECTarc® 1500 AC/DC

One power source for all processes
in large diameter pipe production



PWS offers the perfect welding solution for all processes in the large diameter pipe production with the PERFECTarc® 1500 AC/DC power source for high-speed tack welding, SAW DC and SAW AC.

YOUR BENEFITS

The PERFECTarc® power source of PWS

- “Secondary-clocked” technology – fluctuation of electric network does not influence the arc process.
- Electric efficiency $\geq 90\%$ with uniform load on electric network. No electric compensation needed.
- Fast and precise control of voltage and current ensures a very uniform energy input – and consequently a constant and reproducible metallurgical and geometrical quality of the weld seam.
- Integrated wire-feed control (true “Closed-Loop”) incl. communication between wires (multi-wire-system).
- AC and DC welding processes in CV (Constant Voltage) and CC (Constant Current) changeable on the fly.

POWER FOR DIGITAL WELDING SYSTEMS

to manufacture lsaw and hsaw pipes

The PERFECTarc® full electronic power source is equipped with modern control and power electronic, which is able to control and vary the welding characteristics of the power source at the rate of microseconds, to produce the perfect weld-arc for every welding condition.

The speed and accuracy, at which the PERFECTarc® power sources are able to control the weld-arc and other characteristics, are made possible by an Integrated Closed-Loop System. Welding controller, wire-feed control, and evaluation processor are all integrated in the same unit, and, in one Closed-Loop. The system therefore conveniently eliminates synchronization problem, which results in welding deficiencies – especially in multi-wire submerged-arc welding systems, or at higher welding speeds.

Coupled with a one-of-a-kind programmable welding database, the welding controller of the power source already pre-selects the best “known” power source characteristic, to adopt the power source to the welding process.

This “new generation” PERFECTarc® welding technology offers the following advantages and benefits:

- Fully electronic power source technology, using power electronics instead of transformers results in an efficiency of more than 90% with 30% less energy consumption – at the same welding output power rating compared to conventional power sources.
- The secondary clocked (rated) power source design insulates the welding current from disturbance even when the feed-in power supply from the mains is fluctuating (factory network).
- With the use of the digital power source technology the internal resistance and inductance can be vary – static and dynamic characteristic can therefore be changed without any energy-loss.

- The extremely high control frequency of 20 kHz allows the power source electronics to vary the power source characteristics instantaneously, and with precision within microseconds.
- By the sequential access on the power source characteristics the transition between ignition and welding process is perfectly controlled, which results in a very homogeneous weld seam right from the beginning of the welding process. Shorter welding tab plates may be used.
- The high precision “Integrated Closed-Loop Control” (current characteristic and voltage characteristic) ensures a very uniform heat-input – and consequently, a high metallurgical quality of the weld seam is achieved and maintained.
- A fast acting power source control and the automatic limitations of the wire-feed presents the advantage that short-circuits are avoided after short-time malfunctions. Minor welding defects are therefore prevented or significantly reduced.
- Variable wave form of the AC frequency (sinus to square) and synchronisation of the AC power sources from 0-180° phase angle, adjustable in 1° steps instead of so far fix 90° or 120° steps.
- Welding Data Acquisition System to monitor, record and analyse production data for each welding run. Evaluation of recorded data for statistical purposes – e.g. welding consumption data and QAS.
- The new power source technology offers for submerged-arc welding combined DC and AC processes within one power source, up to a max. current of 1500 A. On the AC processes the wave balance, geometry, amplitude shift and phase shift can be set.



TECHNICAL DATA

State-of-the-art technology in every part

LOAD CIRCUIT OUTPUT FOR AC AND DC

Output Power	from 50 A to 1500 A at 20 V to 44 V
Continuous load (100% duty cycle)	1500 A / 44 V
No-load voltage	95 V
Cable cross section per connection	3 x 120 mm ² Cu

THREE-PHASE MAINS CONNECTION

Line voltage	3 x 500 V 50 Hz
Continuous Input	82 kVA
Continuous current	100 A
Power factor cos.phi	0.95
Line fuse (surge-proof)	120 A
Efficiency	>90 %
Mains cable cross section	4 x 50 mm ² Cu
Dimensions (without eyebolts)	(H x W x D) 1090 x 920 x 1950 mm
Weight approx.	1000 kg
Cooling air requirements	1m ³ / sek.
Type of protection	IP 23
Type of cooling	AF
Isolation class	F

LINE VOLTAGES

3 x 200 V	50 / 60Hz
3 x 208 V	50 / 60Hz
3 x 380 V	50 / 60Hz
3 x 400 V	50 / 60Hz
3 x 460 V	50 / 60Hz
3 x 500 V	50 / 60Hz
3 x 575 V	50 / 60Hz
3 x 600 V	50 / 60Hz

A RELIABLE AND FLEXIBLE PARTNER

PWS is the world leader when it comes to plant and machinery for producing spiral pipes. High standards of quality economically produced – this is what PWS customers have relied on since the company was first founded. The staff at PWS develops tailor-made systems, from individual machines to turnkey integrated plants for piling tubes, water pipes as well as oil and gas pipes. With PWS services customers can be sure that even after decades of use things will continue to run like clockwork.

PWS

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