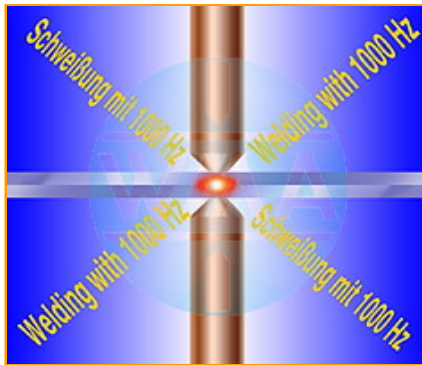




Mid frequency technology

Version: 01-2011



The economical alternative

to conventional resistance welding. The increased use of aluminium, stainless steel and coated materials require a higher standard of manufacturing installations.

There is demand for better, reproduction of weld spots with minimum manufacturing costs.

Increased efficiency by:

- Minimal connection costs due to symmetric mains load.
- Low energy costs due to improve power factor.
- Increased electrode life due to shorter weld times and lower current load.

In general:

- Decrease of transformer weight opens new manufacturing possibilities for the guns (approx.: 50% smaller/lighter)!
- Large throat depths are now possible, due to min. power loss in secondary circuits and reduced gun weights.
- The mid frequency resistance welding technique is available for almost all gun or machine types.

Advantages for welding:

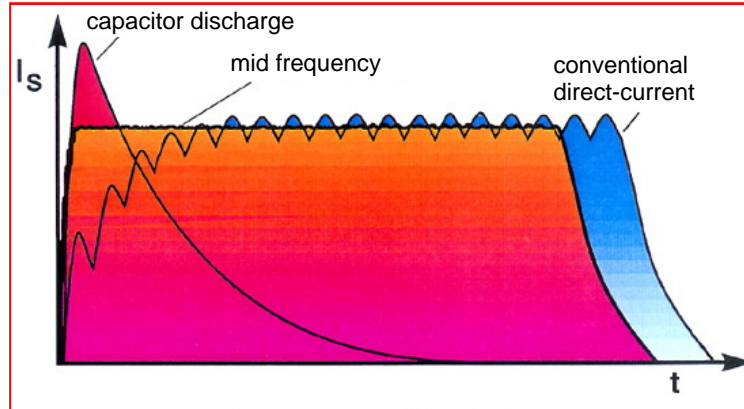
- Extremely suitable for welding aluminium, stainless steel and coated materials.
- Welding dissimilar materials with different heat conductivity is possible, e.g. aluminium to steel.
- Due to rapid weld initiation, there is minimum heat conducted within the tooling, which creates the minimum amount of burning of the coating (f. i. zinc).
- Constant high quality welding due to secondary constant current control.
- Better weld results due to the combination of short weld times and precise weld control.
- The MF system reduces the electrode indentation whilst welding the panel.
- Short weld times because of high power density.
- The spot weld parameters are checked internally during welding to increase spot quality.



Mid frequency technology

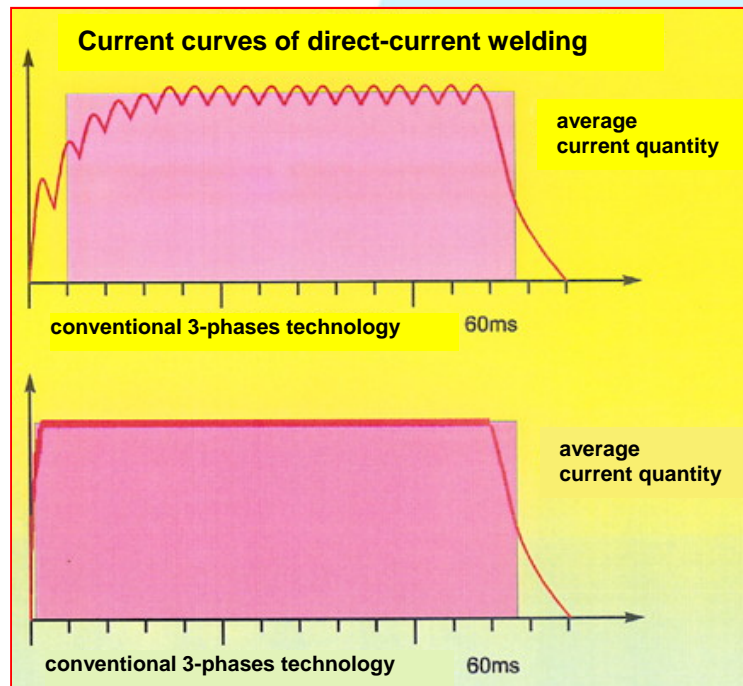
Version: 01-2011

Welding currents in comparison



Mid frequency direct-current with inverter:

- fast rise from the current
- direct-current with high quality
- effective energy



We reserve the right to make changes which are in the interest of technical progress.

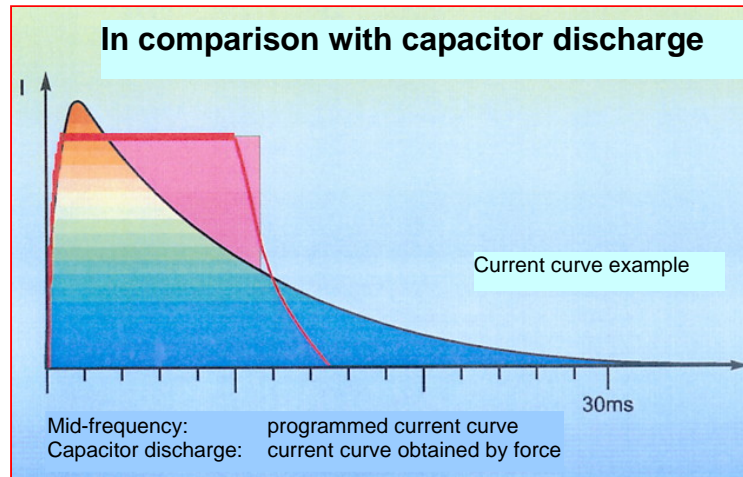
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Mid frequency-2

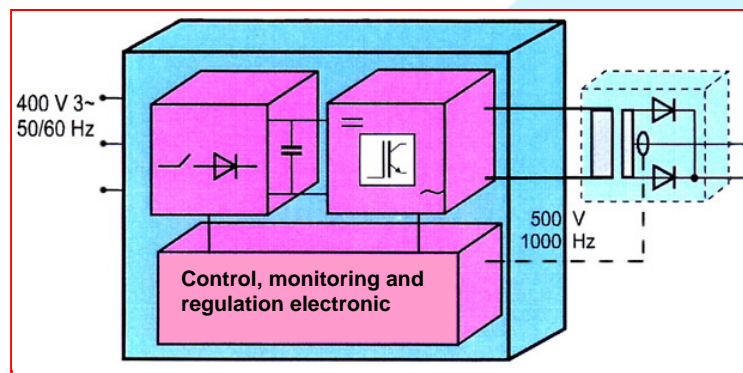


Mid frequency technology

Version: 01-2011

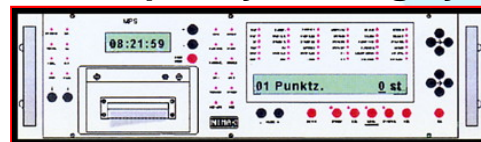


MF-welding system inverter construction



Input: 3 phases 400V/50Hz
Output: 1 phase 500V/1000Hz
Rectifying in the MF transformer

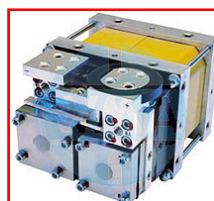
Mid frequency welding system



MF control



MF inverter



MF transformer

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Mid frequency-3



Mid frequency technology

Version: 01-2011

GIGA-WELD, micro processor thyristor controls

- 19"-module with 5,7" color display
- Touch screen and turning knob navigation
- 512 programs
- adaptive control
- Quality assurance processor for monitoring
- Disturbance recognition and control
- programmable measurement inputs for distance, pressure, voltage, current
- Cross linking via field bus (Pro bus)
- System-Controller (for control cabinet mounting)



Order-number with power section 900 A: XS6.302.210

Order-number with power section 1700 A: XS6.302.211

Order-number with power section 2334 A: XS6.302.212



AKZENT 5000, micro processor thyristor control



Order-number:
XS7.302.002
(operating unit)

- great flexibility in assembly
- user-friendly interface
- input possible with PC, Laptop, PLC, etc.
- faults and errors displayed as they occur during the welding process
- 4-line display with scroll feature
- active inputs and outputs displayed
- serial interface RS 232 for one printer
- up to 500 welding programs (can be programmed in any sequence)
- Stepper feature
- easy to expand available functions by simply replacing the plug-in card

Ambient temperature: 0°C to +45°C
Dimensions (B x H x T):
T-5000/3 483 x 133 x 58 mm
T-5000/6 182 x 262 x 55 mm
TS-5000/W 181 x 150 x 355 mm

Control inputs:

Basic model: 9 digital control inputs (free programmable)
Maximum model: 19 digital control inputs (free programmable)

Measurement inputs:

Basic model: 2 measurement inputs (current, voltage)
Maximum model: 5 measurement inputs (current, voltage, pressure, force, distance)

Outputs:

Basic model: 5 outputs (3 x 24 V, 2 x relay)
Maximum model: 13 outputs (11 x 24 V, 2 x relay)

Analogue outputs:

Basic model: 2 analogue outputs
Maximum model: 3 analogue outputs
The function for all outputs can be programmed

Variable output voltage: from 0 to 10 V / max. 10 mA, Preparation of +24 V for valve electronics

Interfaces: HSN (incl. CAN-Bus), RS-232, ArcNet (Option)

Inverter: Connection of an inverter MF-5000 or external medium frequency inverter

Programs: up to 500 welding programs (from 250 programs upwards a larger storage card is necessary)

Process control: Basic model: 8 process times
Maximum model: 20 process times (max. 10 current times)
Option: Process times and start and interruption conditions programmable

3-capacity-seam: up to 1 current time with 3 currents

Cascade: up to 12 transformers at varying phases with automatic phase recognition.
Electric cascade - mechanic cascade with individual starts for transformers

3-Phase: Electrical connection recognition of phases

50 / 60 Hz: automatic 50 / 60 Hz mains frequency and phase recognition

Main compensation: Mains voltage fluctuations from + 15% to - 15% are compensated for

The transformer allocation can be programmed with the TS-5000



Akzent 9000, micro processor thyristor controls

- 19"-module with 5,7" color display
- Touch screen and turning knob navigation
- 512 programs
- adaptive control
- Quality assurance processor for monitoring
- Disturbance recognition and control
- programmable measurement inputs for distance, pressure, voltage, current
- Cross linking via field bus (Pro bus)
- System-Controller (for control cabinet mounting)



Order-number: XS7.303.200 (operating unit, without power section)



Mid frequency technology

Version: 01-2011

Mid frequency inverter 1000 Hz

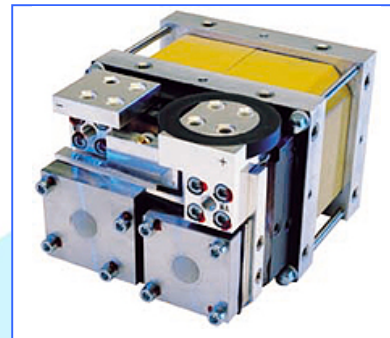
The combination of inverter and medium frequency transformer allows for:

- entirely new possibilities when joining varying, coated materials.
- optimum welding quality
- virtually invisible, high strength welding points
- integrated welding current control with constant current control
- economical for spot welders and 3-phase projection DC machines, welding guns and robotic systems. Economic alternative to the 50 Hz technology in roll-seam, multi-spot and special systems.

Inverter



Transformer



Mid frequency from 250 A to 1900 A.
Greater amp-frequency on request.

A comprehensive range of accessories reduces the costs of installation and initial operation to a minimum.

The design is small and flat, thus allowing for easy installation into standard control cabinets or machine stands.

The inverter can also be supplied ready for connection with control console and main switch.

For those changing from 50 Hz to medium frequency, we have an inexpensive upgrade kit, i.e. you do not have to scrap your still-functioning 50 Hz system!

The inverter provides a compatible interface for your existing control console.

Communication with PC and PLC by means of future-oriented and fault-proof industrial standards as interfaces:

HSN-Bus (CAN-Bus)
TSI-Bus
analogue voltage (0-10 V)
trigger impulse input (6 kHz)

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Mid frequency-7