THE NEW EVOLUTION OF HFI WELDER

HIGH EFFICIENCY WITH SILICON CARBIDE TRANSISTORS

ADVANTAGES

- ENERGY EFFICIENT:
  reduced energy cost by drastic reduction in transistors using the SiC technology

- COMPACT DESIGN:
  single generator cabinet mounted directly over the mill

- INCREASED PRODUCTIVITY:
  quick change power inverter racks

- SHORT CIRCUIT TOLERANT:
  short circuit protection from the coil to the tube

- CONSTANT POWER FACTOR:
  95% maintained throughout the entire power range

- FREQUENCY VARIABILITY:
  auto-tuning of frequency (30% capability)

- VERSATILITY:
  30% power overrating for load adaptation

- INTERNAL ADJUSTMENT SYSTEM:
  X, Y, Z internal coil arm positioning versus external adjustable table
FOUR REASONS TO CHOOSE A MOSWELD SiC

MOSWELD SiC is the ultimate solid state power supply using Silicon Carbide transistor technology, the highest overall energy efficiency (more than 90%) in the market allowing to decrease the production costs.

A GLIMPSE ON SEMICONDUCTOR TECHNOLOGY

MOSFET transistors with SiC substrate allows increased efficiency and reduced maintenance by eliminating a large number of semiconductors, firing and protection circuits as well as interconnection wiring and water cooling requirements.

Comparison by power loss in one 100 kW bridge

100 kW traditional Si transistors

64 X Si Mosfet's
Power loss = 12.8 kW

100 kW + 30% of overcapacity SiC devices

4 SiC Mosfet's
Power loss = 1 kW

MACHINE FEATURES

- Modular Silicon Carbide based Inverter
- MOSFET transistors with SiC substrate
- Single cabinet design up to 1 MW
- Load short circuit protection (Proof is absolute)
- XYZ table inside the cabinet
- Easily adaptable to existing coil designs in most cases
- Sliding power modules for easy maintenance
- Fully-automatic remote controls
- Proven reliability in tube mill environments
- If a power module fails, the unit can still run

TECHNICAL INFO

Continuous output power

100 - 1000 kW

Power regulation range

1 - 100%

Frequency range

100 - 400 kHz

Voltage supply

[400,480] V ± 10% 50, 60 HZ (no input transformer required)

Power factor

> 0.95 at any load

Max. ind water temperature

32°C with dew point control

Air Conditioning

Included

Control welder

Siemens PLC

Standard colour

Light grey RAL 7035

XYZ table

A/C included

A/C included

XYZ table
Silicon Carbide SiC transistor technology allows for higher capacity device utilization. Larger capacity reduces the quantity of devices required over traditional Si transistors thus, increasing reliability and electrical efficiency. In the end, this simplistic design gives advantages over traditional complex Si transistor designs in lower overall operational cost.

An optimized control is adopted to limit the sensitivity to short circuits, minimizing downtime and also protecting the system. The galvanic insulation is provided by means of a transformer placed between an inverter and an oscillator.

Auto-tuning for coil adjustment and intrinsic load adaptation features are implemented for easy welder usage. The three-axis adjusting table is integrated in the welding head. A single cabinet layout is adopted for the entire range up to 1000 kW.

### TECHNICAL INFO

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- **XYZ table inside the cabinet**
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- **Fully-automatic remote controls**
- **Proven reliability in tube mill environments**
- **If a power module fails, the unit can still run**

### SLIDING POWER MODULES

- **Compact**
- **Easy maintenance**
- **Money Saving**
- **Energy Saving**

### FOUR REASONS TO CHOOSE A MOSWELD SiC

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- **Sliding power modules**
- **A/C included**

**Comparison by power loss in one 100 kW bridge**

- **4 SiC Mosfet’s**
  - Power loss = 1 kW
  - 100 kW + 30% of overcapacity
- **64 X Si Mosfet’s**
  - Power loss = 12.8 kW
EMMEDI Line of Products

For over five decades, EMMEDI has earned an outstanding reputation in the tube industry for reliability through superior technology and quality of design. The EMMEDI line of products is recognized worldwide as an industry leader with over 1000 global installations. EMMEDI welders are installed throughout the world since the early 1960’s. Our welders have earned a reputation for their reliable design and advanced engineering. From vacuum tube welders to solid-state welders and now with the NEW SiC technology, EMMEDI is still leading technological advancements in the market. EMMEDI supplies a full line of products to the tube, pipe and wire industries. With our affiliation within the Ajax TOCCO family of global companies, we now offer expanded global solutions with local parts and service capability.

SEAM ANNEALING

This process is dedicated to the normalization of the Heat Affected Zone (HAZ) required to meet API standards for Oil and Gas applications. EMMEDI units are equipped with highly-reliable power supplies and special inductors to optimize the area involved by the heating process. Flexibility is maximized by using multiple independent heating heads, each one individually controlled by a closed-loop PID temperature control.

IN-LINE BRIGHT ANNEALING

The in-line bright annealing process is mainly used with stainless steel AISI 300, AISI 400, duplex, super-duplex and titanium pipes for various application such as petrochemical, furniture, automotive, food and beverage. EMMEDI systems grant fast and precise process with reduced footprint. Moreover no warm up time is required.

IN-LINE CUSTOMIZED HEATING SYSTEMS

Throughout the years EMMEDI has increased competences and skills in the design and manufacture of customized solutions and is able to answer the most demanding requirements thanks to the metallurgic laboratory and expertise in mechanical handling. EMMEDI is now taking advantage of the new synergies with Ajax TOCCO Magnethermic Corporation, one of the oldest and most experienced manufacturers of induction heating equipment, to offer tailored state-of-the-art solutions and worldwide sales and service assistance.