SiCtech
INDUCTION
Driving Innovation

SiCBond Family

Silicon Carbide Bonding Generator

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The SiCBond Family

The **SiCBond** family of power supplies corresponds to a range of oriented-application generator focused in bonding applications by induction heating with a maximum total power of 100 kW for some bonding non ferromagnetic materials as Aluminium.

SiCBond generators family can be single output for full bonding or dual bonding, with just one heating inductor or with several U inductors connected in series, dual output for twin bonding or up to 8 independent power ports for spot bonding applications.

SiCBond generators are based on the ultimate power electronics technologies as Silicon Carbide (SiC) MOS Transistors, ultrafast high isolation circuitry and advanced transistor driving circuits and fully digital controller all integrated in a PCB, allowing an overall efficiency higher than 98% @ 40 kHz (inductor losses not included) and consequently very small and compact chillers.

Full, Dual or Twin SiCBond generators require an external heating station including the resonant capacitor bank and the Spot generators SiCBond-S Family integrate the resonant capacitor bank inside the generator and is connected to the bonding U-Inductor via an extremely small and highly efficient coaxial transformer

SiCBond integrate a cooling system that can be configured as Air/Water cooling system or water/water cooling system according customer's needs.

SiCBond generators are very simple to operate as the control features simplifies the operation of the inverter and the HMI guides the user with very simple instructions to operate the machine.

THE MAIN ADVANTAGES OF SiCtech TECHNOLOGY

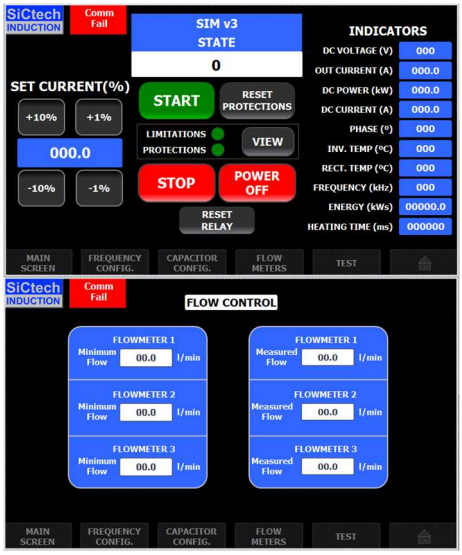
- ⇒ Wide Range of bonding applications with the same generator.
- ⇒ Extremely high efficiency.
- ⇒ Very small size and weight.
- ⇒ Very high robustness due to the use of SiC MOS Transistors.
- ⇒ Very easy use of the generator due to the use of advanced cyber-physical algorithms that auto-adjust the generator depending on the required heating process.

The SiCBond Family Features & Subsystems

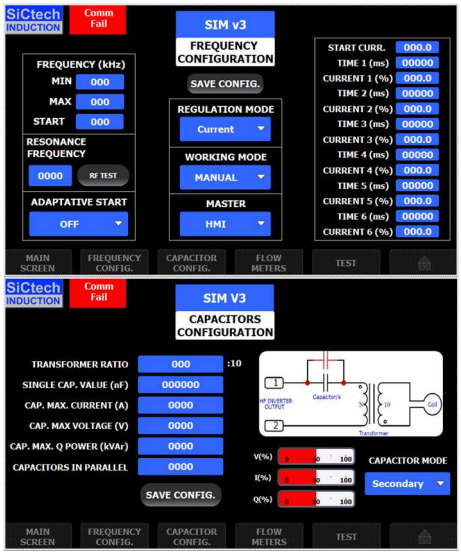
SiCBond heat treatment units ranges power from 25 to 100 kW. The supply voltage is 400 / 480 V_{AC} ± 10 % and the system has integrated his own cooling system. As standard, **SiCBond** Family include the Siemens PLC with communication capabilities via industrial buses like Profinet, Modbus, Ethernet etc. **SiCBond** HMI options are a Siemens PLC and pyrometric control.

The **SiCBond** family is based on the 25, and 50 kW SiCtech MF power modules that include in a PCB, a plug-able FPGA controller as well as the power section and a water cooled heatsink that features all the requirements needed in an induction heating application.

For Full, Dual and Twin bonding, SiCtech offers standard as well as custom design external heating stations integrating in a, up to 10 m., separate cabinet a highly efficient output transformer and the resonant capacitor bank. In case of Spot Bonding, SiCtech provides external very highly efficient reactive coaxial water-cooled transformer for the connection of the generator to the bonding U-coil.



A highly interactive and comprehensible HMI guides the user in any interaction with the generator as the starting up, the temperature cycle programming, the resonant frequency selection by the autotuning function, the matching of the load etc. and provides information on the status and working conditions of the generator at any time.



KEY FIGURES

- ⇒ **Up to 100 kW Continuous Power**
- ⇒ **10 - 50 kHZ**
- ⇒ Up to 2 independent power ports for twin bonding
- ⇒ Up to 8 independent power ports for spot bonding
- ⇒ Connection to the heating station up to 10 m.
- ⇒ Programmable heating segments

The SiCBond Family Technical Specs

SiCBond Family	SiCBond-F 50k50F	SiCBond-F 100k50F	SiCBond-T 50k50T	SiCBond-T 100k50T	SiCBond-S 50k50S	SiCBond-S 100k50S
Type of Bonding Process	Full Bonding Full Spot Bonding	Full Bonding Full Spot Bonding	Full Bonding Full Spot Bonding	Full Bonding Full Spot Bonding	Spot Bonding	Spot Bonding
Generator Operation Mode	Single or Dual Operation Mode	Single or Dual Operation Mode	Twin Operation Mode	Twin Operation Mode	Spot Operation Mode	Spot Operation Mode
Total Continuous Output Power	50 kW	100kW	50kW	100 kW	50 kW	100 kW
Output Circuits	1	1	2	2	4	8
Power per Output	#1: 50 kW	#1: 100 kW	#1: 25kW #2: 25 kW	#1: 50 kW #2: 50 kW	Each output: 12,5 kW	Each output: 12,5 kW
Output Frequency Range	10…50 kHz					
Inverter Efficiency	98,9 % @ 40 kHz					
Mains Voltage [1]	400-480 V_{AC} ± 10 % (Three-Phase)					
Cos (φ)	> 0,99					
Heating Station	External	External	External	External	Coaxial Transformer	Coaxial Transformer
Inductor Short Circuit	Yes					
Controller	Fully Digital Controller					
Power Regulation [2]	2…100 %					
Power Setting Time [3]	< 1 ms					
Size (W x D x H) (mm)	600x800x1.800	600x800x1.800	600x800x1.800	600x800x1.800	600x800x1.800	600x800x1.800
Weight	215 kg	215 kg	215 kg	215 kg	215 kg	215 kg
Cooling	Integrated Air/Water or Water/Water Cooling System					
Water Max. Temperature	35 ºC					
Environmental Temperature Range	+5 °C to +35 °C					
Maximum Humidity	90 %					
User Interface	Siemens HMI KTP700					
Standard Fieldbus	ModBus TCP/IP					
Optional Fieldbuses	Profinet, DeviceNet,					
Optional External Control Unit	The Unit comprises: External Star/stop, External power control, External Emergency Stop					
Optional Temperature Control	Low temperature Pyrometer (150-400 ºC)					
Optional Cable Length	10 m					

NOTE:
[1] For 480 VAC contact with SiCtech
[2] At Nominal Load
[3] At Adaptive Mode

Subject to changes

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