

Induction Heating Solutions for Epitaxy

Power Range: 100kW – 750kW

Frequency Range: 1kHz – 50kHz

Epitaxy refers to the method of using chemical vapor deposition (CVD or MOCVD) to deposit a monocrystalline film on a monocrystalline substrate. The deposited film is denoted as epitaxial film or epitaxial layer. This process is used for the production of semiconductors and LEDs. Pillar MK11 series generators provide consistent and reliable induction heating for the process.

System Features Include:

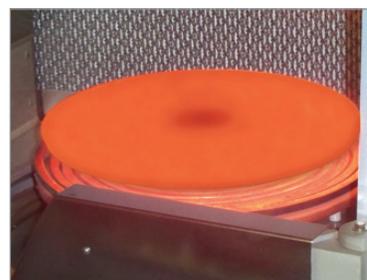
- No consumable components (i.e. tubes)
- 47% less power directly used by RF generator
- IGBT power control instead of tube so no more tube changes or power drifting
- Less demand on facilities which could require expensive facility improvement as more equipment is added
- Better temperature uniformity
- Plenty of power to reach the hottest process temperatures. Less faulting for those higher demand processes
- Does not require any facility changes to install
- Possible energy rebate from federal and/or state governments
- 10.4" Touchscreen HMI including resistive touch display
- IGBT Insulated Gate Bipolar Transistor modules
- Direct modern replacement for motor generator and SCR technology
- 96.7% conversion efficiency
- Power Factor 0.95 from 0 to 100% power
- Parallel tuned output circuit
- CVS Control Transformer protection against input power swells, sags, brownouts and waveform distortion
- Wide matching range capability
- Lockable molded case disconnect complete with under voltage trip coil
- 24 volt door interlock system with an externally accessible handle
- Single main control board within a separate lockable door for safe access
- Isolation output transformer
- Full height safety interlocked doors
- Single sided – front access for serviceability
- NEC and NFPA79 Wiring codes
- Heavy welded steel channel base with fork lift slots
- Precut access panels for power infeed and output

MK11

Features & Specifications



300kW – Size 2 cabinet



Epitaxy / MOCVD susceptor in operation



Optional HMI Control Panel

Epitaxy

Operator Interface:

- 3 start-up screens
- Power, frequency and voltage displays in run mode
- Tank circuit tuning displays load and frequency
- Built-in non-intrusive diagnostics, monitoring and troubleshooting displays
- Fault and limit identification displays
- Fault log
- Status screens
- Interactive diagnostic prompt screens for fault and limit corrections
- 10 turn power level potentiometer

Utilities:

- 95° F (35° C) maximum water inlet temperature
- Water inlet and outlet fittings on cabinet top
- Inlet and outlet pressure gauges with differential pressure safety switch
- Water temperature sensing fault circuits
- Power devices cooled by parallel cooling circuits
- Input power 480 V, 3Ø 50/60 Hz

Optional Features:

- Remote operator's panel (local and remote)
- 4/20mA interface
- Integral or remote heat stations
- Ground fault detection circuitry
- Externally accessible Ethernet connection to monitor internal functions remotely
- CE and ETL certifications available
- Process fixturing, tooling and turnkey systems available
- Preventative maintenance and extended warranty programs available

Cabinet Specifications				
Cabinet Size	Height	Width	Depth	Weight
Size 1	85" (2160 mm)	36" (915 mm)	36" (915 mm)	1500 lb (680 kg)
Size 2	85" (2160 mm)	48" (1220 mm)	36" (915 mm)	1900 lb (862 kg)
Size 3	85" (2160 mm)	84" (2134 mm)	36" (915 mm)	2500 lb (1134 kg)

Performance Specifications	
Power Circuit	Voltage source, parallel tuned
Energy Conversion Efficiency	up to 96.7% (frequency dependent)
Input Power Factor	0.95
Output Regulation	Voltage, kW, or current(optional)
Regulation Accuracy	±1% with ±10% input voltage variation
Minimum Output	~ 10% of rated power
Ramp Up to 100% Output	70 milliseconds
Water Inlet Temperature (max)	95°F (35°C)
Power Requirements	480 V, 3 phase, 50/60 Hz

kW \ kHz	Cabinet Size								Utility Requirements			Heat Station
	1	3	10	25	50	1/3	3/10	10/25	kVA	Line Amps	Cooling Water (GPM/lps)	
100	1	1	1	1	1	-	1	1	111	133	15 / 0.95	Attached / External
150	1	1	1	1	2	-	1	1	167	200	15 / 0.95	Attached / External
200	2	2	2	2	2	-	2	2	222	267	25 / 1.58	Attached / External
250	2	2	2	2	3	-	2	2	278	333	25 / 1.58	Attached / External
300	2	2	2	2	3	-	2	2	333	400	25 / 1.58	Attached / External
400	3	3	3	3	3	3	3	3	444	534	40 / 2.52	Attached / External
500	3	3	3	3	-	3	3	3	555	666	40 / 2.52	Attached / External
600	3	3	3	3	-	3	3	3	666	800	40 / 2.52	Attached / External
750*	3	3	3	3	-	3	3	3	832	1,000	50 / 3.15	Attached / External

Specifications subject to change without notice.

*575 Volt, 3-phase Input Voltage

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