# Modular HF Power Supply of Induction Furnace

## Chindow Electric Co. ltd

Adress:1602,building 115,No. 800,Ruilin Rd,Shanghai,Chinahanghai,China

Email:chindow@chindow-electric.com

Tel:+86 18616821052 .com

Web:www.chindow-electric.com

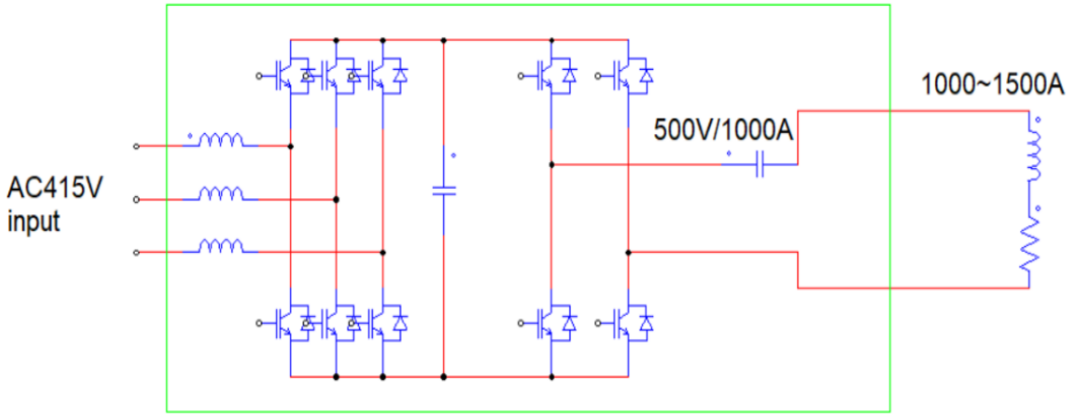
# Preface

Modular power supply of induction furnace, which consists of standard 100kW modules with DSP-controlled IGBT working as full-bridge rectifier circuit (VS thyristor of mid frequency counterpart) & IGBT as inverter circuit, features its power factor 0.99 (VS 0.63 of thyristor-based mid frequency counterpart), THDi 3.2% (VS 30% of thyristor-based mid frequency counterpart ), saving energy by minimal 16%, size reduced by 79% & weight reduced by 64%, compared with its thyristor-based mid frequency counterpart.

Up to 10 units of 100kW modules can be connected in parallel to form up to1000kW power supply arranged in a cabinet,

# Work Principles

Advanced DSP controlled full-bridge IGBT is adopted to work as AC-DC rectifier circuit, metal film capacitor as DC link capacitor & IGBT as DC-AC inverter circuit, which allows for AC output with variable frequency, variable voltage, and variable current which can align with changing load resistance of induction heating/smelting/quench applications.



## Performance Features

- DSP digital control technology along with IGBT to enable control of frequency & voltage & current to align with the induction heating requirement with changing load resistance
- IGBT to take the place of thyristor as rectifier with power factor 0.99 and THDi 3.2%
- IGBT to take the place of thyristor as inverter circuit with efficiency 95%
- Saving by 16% compared with its thyristor-based mid frequency counterpart
- Output frequency ranges from 0 to 10k Hz
- Output voltage ranges from 0V to 800V
- Output current ranges from 0A to 4000A
- HMI display with RS485 and ethernet communication
- PWM to control multiple modules

## Standard Adopted & Working Environment

### Standard Adopted

- IEC60947-1:2007
- IEC61439-1:2009
- CE marking
- IEC61000-6
- IEC61000-4
- IEC61000-3

### Working Environment

- Ambient temperature: -10℃~50℃
- Temperature for storage: -40℃~65℃
- Relative humidity: up to 99%
- Altitude above sea: 1000 meters

# Specifications

| Product Model | MPS200 | MPS300 | MPS400 | MPS500 | MPS600 | MPS700 | MPS800 | MPS900 | MPS1000 |
|---|---|---|---|---|---|---|---|---|---|
| Module quantity | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| AC input voltage | 380V/415 V ±15% AC | | | | | | | | |
| AC input frequency | 50Hz/60Hz | | | | | | | | |
| Rated output (kW) | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 |
| Output freqncy range | 0kHz~10k Hz | | | | | | | | |
| Output voltage range | 0 ~ 800 V | | | | | | | | |
| Output current range（V） | 0~800 | 0~1200 | 0~1600 | 0~2000 | 0-2400 | 0~2800 | 0~3200 | 0~3600 | 0~4000 |
| Power factor | ≥0.99 | | | | | | | | |
| THDi | 3.2% | | | | | | | | |
| Efficiency | 94% | | | | | | | | |
| Dimension (mm)(W*D*H) | 1000*1000*1800 | 1000*1000*1800 | 1000*1000*1800 | 1000*1000*1800 | 1600*1000*1800 | 1600*1000*1800 | 1600*1000*1800 | 1600*1000*1800 | 1600*1000*1800 |
| Weight (kg) | 235 | 280 | 325 | 420 | 465 | 510 | 555 | 600 | 645 |
| Cooling | Water cooling | | | | | | | | |
| IP rating | IP54 | | | | | | | | |
| Communication | RS485/Ethernet | | | | | | | | |
| Control display | 7/10 inch HMI | | | | | | | | |

# Applications

- Rare core smelting
- Silicon carbide smelting
- Magnet material smelting
- Saphire smelting
- Thermal treatment of alumilium material
- Thermal treatment of steel
- Thermal treatment of copper
- Quenching of metal material