5th Generation Power Supply of ESP

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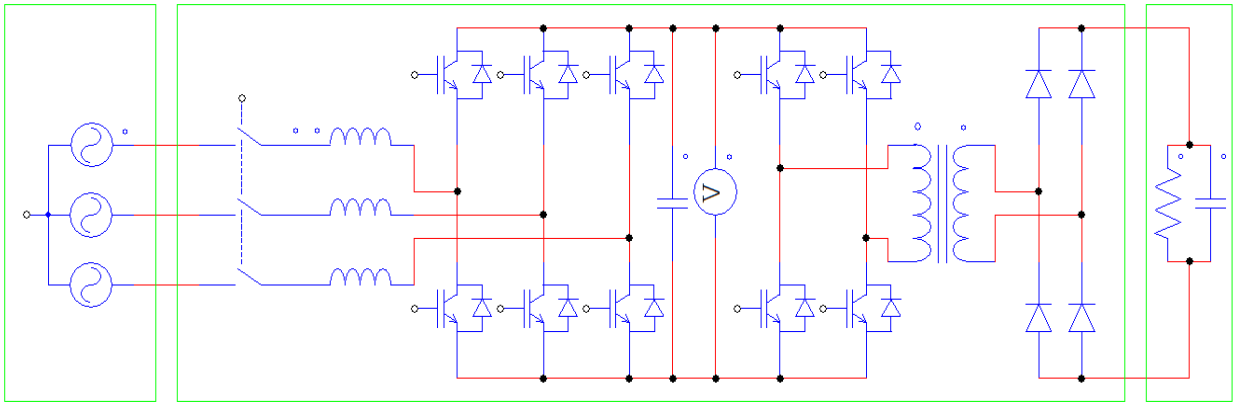
PREFACE

G5 HFPS of ESP (5th generation high-frequency power supply of electrostatic precipitator), with output voltage ranging from 60kV to 140kV, output current 200～2600mA, features its stable output voltage and current, high operating frequency 30kHz, high conversion efficiency 94%, and high power factor 0.99, etc.

5th generation power supply for ESP can be used in both dry and wet electrostatic precipitatior, with its stable output current and voltage to achieve better precipitation permeance than diode-rectified HFPS and conventional TR (transformer rectifier)

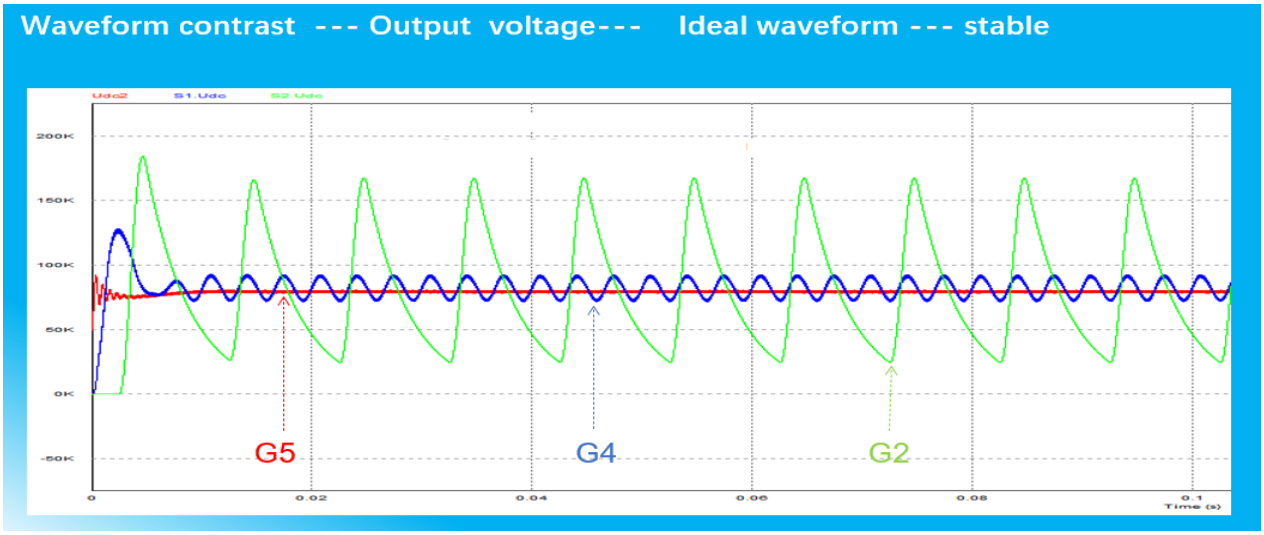
WORK PRINCIPLES

DSP-controlled IGBT AC/DC rectifier circuit is adopted to charge the DC link capacitor, then the IGBT inverter converts DC back to AC to be stepped up to 60~140kV by high frequency transformer. The 60~140kV AC is converted to DC by diode to be fed to ESP field to collect the dust.



FEATURES OF G5 HFPS

- DSP digital control technology is adopted with strong reliability;
- High operating frequency, up to 30kHz, to enable stable output voltage and current
- DSP controlled IGBT rectifier & IGBT inverter to enable efficiency 94%
- The power factor 0.99 to minimize the power consumption
- THDi (total harmonic distortion current) 3.2% is friendly to the grid
- Both frequency and voltage can be controlled as threshold to achieve desired output



G5 stands for G5 HFPS G4 stands for diode-rectified HFPS G2 stands for conventional 50Hz/60Hz TR

APPLICABLE STANDARDS & WORKING ENVIRONMENT

Applicable Standards

- 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

Electric parameter

Grid input	380V ~ 480V AC, +/- 15%, 3 phase; 50Hz/60Hz, +/- 10%
DC output	200mA ~2600mA standard; customization available
Current accuracy	0.5%
Conversion efficiency	≥94%
Power factor	≥0.99
Max output frequency	≥30kHz
Protection	Oil Temperature Alarm Oil Temperature Trip IGBT Temperature Alarm IGBT Temperature Trip Cooling Fan Failure Trip Input Overcurrent High Trip Input Overvoltage High Trip Output Undervoltage Low Trip Open Circuit Protection Short Circuit Protection Communication Failure Frequency Unbalance Trip Interlock Trip
Rapper control	optional
Back corona	Available
Pulse mode operation	Available
Cooling method	Forced air cooling
Transformer type	Oil-immersed
Protection level	IP54
Communication Interface	RS485/Internet
Control method/display	HMI

Physical parameter of 60kV ~90kV series

DC output Voltage (kV)	60~90			
DC output current (A)	0.2~0.6	0.8~1.4	1.6~2.0	2.2~2.8
Dimension (DWH, mm)	900*1316*1400	900*1500*1300	950*1500*1300	1550*1500*1600
Weight (kg)	400	540	650	1150

Physical parameter of 90~120kV series

DC output Voltage (kV)	90~120			
DC output current (A)	0.2~0.4	0.6~1.2	1.4~1.8	2.0~2.4
Dimension (DWH, mm)	900*1316*1400	900*1500*1300	950*1500*1300	1550*1500*1600
Weight (kg)	400	540	650	1150

*Dimension is subject to actual design based on specific requirement of clients

INDUSTRIES APPLICATION

- Power plant
- Steel works
- Cement plant
- Petrochemical plant
- paper mill
- Pulp plant
- sugar plant
- Textile plant
- Pharmaceutical plant
- chemical plant
- Oil and gas
- Mining