

Clean, Energy Saving, Cost Effective 50/60/400Hz Bulk Power Solution



Bulk Power

In commercial industries or defense/aerospace industries, manufactures or laboratories use bulk power in electric distribution panel to provide different frequency or voltage for their equipments or products in production line or facility power. Bulk power converts the voltage and frequency of utility grid to a new AC power at a required voltage and frequency with electrical or galvanic isolation between the two AC powers. It's usually used for converting between 50Hz and 60Hz for industrial applications, or converting to 400Hz for military and aerospace applications.

For equipments or certain production line, they may only need different fixed output voltage like 208V/220V/240V...480V and fixed frequency output with 50Hz, 60Hz or 400Hz. If they will extend the bulk power applications to burn-in test, QC/QA test, aging test, or laboratory environment or compliance test, they may need larger adjustable voltage and certain frequency range to provide more flexibility for their testing units or products.

A. Rotary Motor Generator Sets

Rotary motor generator used a motor to drive an AC generator or alternator to produce the required frequency and voltage. The coupling between motor and generator is either belts with pulleys system or direct shaft coupling. Hence, it is called rotary frequency converter. In the earlier days, it is also MG set which stands for motor and generator. It can provide fixed or very limited adjustable range of voltage and frequency. MG set is robust, but the disadvantages are noisy, size is big, heavy, low efficiency, and need regular maintenance.



B. Variable Voltage Transformer

As MG set can only provide fixed or limited voltage range output, they may use a variable voltage transformer to provide larger variable voltage output. But the efficiency is lower and the output THD and stability are not easy to control within a certain range. Total cost and future maintenance cost are relative high.

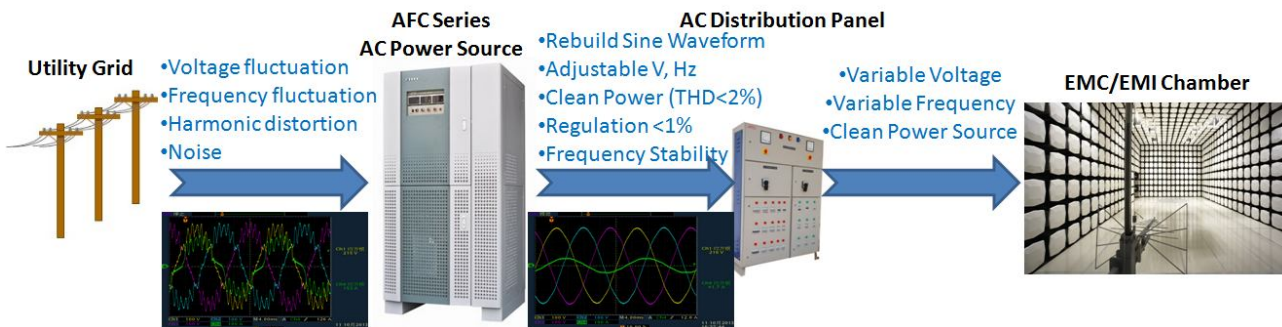


C. Static Type AC Power Source

The static type AC power source is an electronic device and has no moving parts. The main components of the most common type are the rectifier and the inverter. The static type AC Power

source used semiconductors to rectify input power into DC power before using an inverter to generate a new AC power at the required frequency and voltage. It rebuilds the input AC source power from AC to DC then DC to AC and provides an isolated clean power source to the load. It provides more clean power source with wide adjustable voltage and frequency range. It is an ideal solution to provide the bulk power or facility power applications.

In the past, the cost of static type AC Power sources were too high that most of test labs selected MG set with variable transformer for their power source requirements. As the technology improved, Preen developed a high reliability and cost effective solution for chamber power and facility power applications. Not only provide a fixed clean power source, but also with variable voltage and frequency output range, low EMI conductive noise, and high efficiency. It has been widely used in major certification chambers, industrial manufactures, test labs, and military/aerospace test labs.



- a. Isolated noise from the grid
- b. Rebuild sine waveform (prevent THD from the grid)
- c. Large adjustable voltage and frequency range
- d. Noiseless and suitable for indoor installation
- e. High efficiency and energy saving
- f. Long term operation without regular maintenance issue
- g. Output voltage regulation and high frequency stability
- h. Fast response time for load variation
- i. Compact size for saving installation space
- j. Light weight and movable

50/60Hz Industrial AC Power Source - AFC Series

The AFC Series is an economically priced AC power source to provide reliable voltage and frequency simulation for general applications. Utilized PWM switching technology, AFC provides high quality pure sine waveform with output level up to 2,000kVA. The AC source is coupled with output voltage range of 5~300V and output frequency of 47~63Hz, 50/60Hz fixed. User can select optional frequency output of 2 or 4 times standard frequency and 400Hz.



AFC Product Series (IGBT Based)	
Capacity	0.5~2000kVA
Input Phase	1P In/1P Out: 0.5~30kVA 3P In/1P Out: 10~150kVA 3P In/3P Out: 6~2000kVA
Input Voltage	120V/208V, 220V/380V, or 277V/480V
Output Voltage	Low Voltage Mode: 5V~150Vac (L-N) High Voltage Mode: 10V~300Vac (L-N)
Output Frequency	47~63Hz, 50Hz, 60Hz, 400Hz (Option)
Efficiency	2~75kVA: >90%, >100kVA: >85%
Line Regulation	<1%
Load Regulation	<2%
Frequency Stability	<0.01%
THD	<2%
Unbalance Load	100% Unbalance Load

400Hz Military & Aerospace AC Power Source - AMF Series

The Output voltage of the AMF series is 115/200V with an adjustable range of 10%. Users can switch between output frequency 400Hz fixed and 350~450Hz adjustable. With overload drive capability and reverse energy protection, the AMF series is ideal for motor, aerospace and military types of application.



AMF Product Series (IGBT Based)	
Capacity	6~300kVA
Output Voltage	115/200Vac +/-10% Adjustable
Output Frequency	400Hz , 350~450Hz
Efficiency	>90%
Regulation	<3%
Frequency Stability	<0.01%
THD	<0.5%(0.5~1kVA), <2%(1~45kVA), <3%(>45k)
Overload Capacity	120%~1hour, 150%~1min, 200%~15sec
Unbalance Load	100% Unbalance Load
Phase Shift	Balance Load<2°, Unbalance Load<4°

45~500Hz, 300~800Hz Wide Frequency AC Power Source - PWF Series

The PWF series consists of L series and M series, which have different output frequency range. L series provides 45~500Hz and 0~300V output, and M series provides 300~800Hz and 0-150V output. Users can select communication interfaces of RS-485, RS-232, and optional GPIB. The PWF series also have programming sequence functions of STEP and GRADUAL modes, three phase independent control, phase angle control, and disturbance features.



PWF Product Series (IGBT Based Wide Frequency)	
Capacity	30~75kVA
Output Voltage	PWF-L: 0V~300Vac (L-N) PWF-M: 0V~150Vac (L-N)
Output Frequency	PWF-L: 45~500Hz PWF-M: 300~800Hz
THD	<2%
Regulation	<1%
Overload Capacity	125%-30min, 150%-10min, 200%-1min
Frequency Stability	<0.01%
Adjustable Voltage Resolution	0.1V
Adjustable Frequency Resolution	0.1Hz

High Power DC Power Supply – ADG Series

ADG series is a programmable DC power supply with high power density and high output power, and offers many great advantages on response time, accuracy and output voltage range. ADG is an excellent source for testing or facility type applications, such as aerospace, renewable energy, automated test system, battery and server.

ADG Product Series DC Power Supply	
Type	Switching (IGBT)
Capacity	30 -80kW
Output Voltage	0~1000VDC
Current Limit Adjust	10~100%
Transient Response Time	<10ms
Line Regulation	<0.01%
Load Regulation	<0.01%
Ripple	•<300 Vrms



Example –Production Line Bulk Power (1200kVA, 800kVA AFC/AFV)



Example –Quality Assurance Test, Environment Test

a. Product Burn-In Test



b. Temperature/Thermal Chamber Test



c. On/Off Life Cycling Aging Test



d. Salt Spray Test Platform



c. Vibration Test



d. Dust Test



Example –Laboratory Test

a. Electrical Compliance Test Platform



b. Efficiency/Performance Test



Example –EMC Chamber Power (200kVA AMF, 50kW ADG)

