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GEYA®

电能质量
Power Quality Management

Product Manual



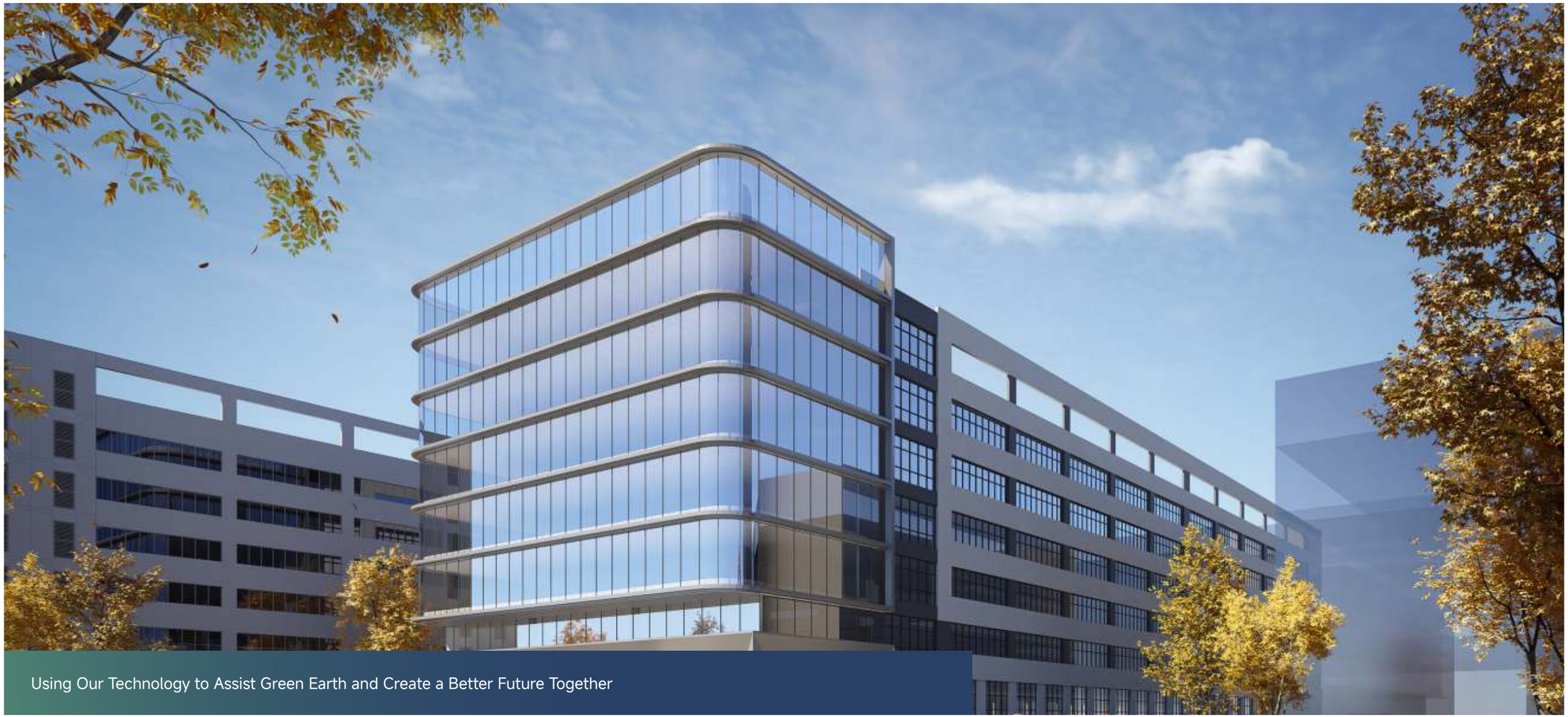
GEYA®

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Using Our Technology to Assist Green Earth and Create a Better Future Together

ABOUT US

浙江格亚电气有限公司成立于2007年2月，地处浙江温州，是一家专业从事新能源电气与自动化控制产品自主研发、生产、销售及配套服务的高新技术企业。公司具备完整全产业链运营能力，依托规范经营管理与持续技术创新，综合实力稳步提升，年营业额已突破2亿元人民币，综合产能及行业综合实力位居区域行业前列。
公司主营低压电器元件、工业自动化控制元件全系列核心品类，可同步提供低压配电系统、自动化控制系统、新型智能电力系统定制化成套解决方案，可对接各类政企工程、工贸企业、跨境项目，交付一站式全流程配套服务。产品适配多类工业、基建、新能源全域应用场景，性能稳定、合规达标率高，收获海内外客户一致认可与长效好评。公司深耕全球化市场布局，销售网络覆盖全球六大洲，累计服务一万余家海外合作企业，渠道体系成熟完善。现面向全球开放区域代理、批量集采、专项项目共建等多元合作模式，携手共建电气产业共赢生态。

自成立以来，公司秉持“格物知致，亚行天下”企业理念，坚守品质为先、创新赋能核心发展原则，严控产品高标准、高性价比、高品质三道核心关口。目前已斩获多项国家实用发明专利，完成GEYA品牌多国全域合规布局。全系产品严格对标国际行业准入标准，顺利取得CCC、CE、SAA、SEMKO、TUV、EN等国内外权威全套资质认证，全面符合欧洲、中东等多国属地质量核验标准，跨境供货合规无壁垒。公司可正规承接全球客户OEM、ODM定制化代工研发服务，已与多家国际知名电气品牌达成长期稳定战略合作。专业实战型营销服务团队全域联动，稳步拓宽海内外品牌市场版图，持续强化品牌核心竞争力。
格亚电气诚邀海内外优质代理商、渠道商及工程合作伙伴携手拓市，共享行业发展红利。我们将以过硬原装全系产品、高效全天候专属配套服务、极具市场竞争力的合作扶持政策，全方位护航合作伙伴稳定创收、长效经营。
格亚电气匠心做品质、专心做科创、诚心做合作，期待与全球客商同心同行，共创电气行业高质量发展新未来！

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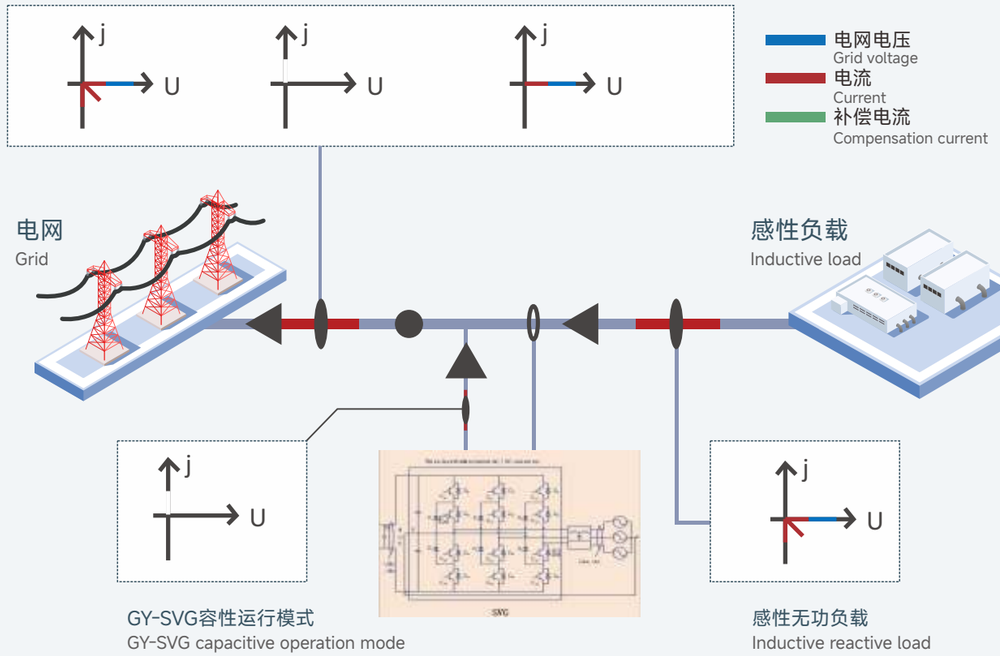
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静止无功发生装置
Static Var Generator

GY-SVG

静止无功发生装置（GY-SVG）的工作原理是将电压源变流器经过滤波器并联在电网上，通过调节变流器交流侧输出电压的幅值和相位，针对电网系统中无功功率进行动态精准补偿，瞬态响应时间小于 50us，全响应时间小于 10ms，避免过补和欠补的发生。

Working Principle of Static Var Generator (GY-SVG):
The device connects a voltage source converter (VSC) to the power grid via a filter in parallel. By adjusting the amplitude and phase of the output voltage on the AC side of the converter, it dynamically and accurately compensates for reactive power in the grid system. The transient response time is less than 50 μs, and the full response time is less than 10 ms, thereby avoiding over-compensation and under-compensation.



电网电压
Grid voltage
电流
Current
补偿电流
Compensation current

GY-SVG容性运行模式
GY-SVG capacitive operation mode

感性无功负载
Inductive reactive load



壁挂式模块
Wall-mounted module



机架式模块
Rack-mounted module

性能特点 Performance characteristics

1）DSP+CPLD 全数字控制核心，三电平拓扑技术，先进的无功检测算法和 PWM 控制策略。
2）模块化设计，可多模块并联，占地空间小、维护方便。
3）独立风道和独立板仓结构设计，保证设备的稳定运行。
4）具有两路外部电流采样通道，可支持低压侧采样低压侧补偿、高压侧采样低压侧补偿、无功分量补偿等多种补偿方式。
5）支持无功补偿、无功补偿+三相不平衡补偿模式可选。
6）无功补偿能力：补偿率≥99%。
7）不平衡补偿能力：补偿后不平衡度≤5%。
8）对负载的动态响应速度为毫秒级，能实现对冲击性无功功率负荷的动态精准补偿。

1.DSP+CPLD full digital control core, three-level topology technology, advanced reactive power detection algorithm, and PWM control strategy.
2.Modular design, supports paralleling of multiple modules, small footprint, easy maintenance.
3.Independent air duct and independent board compartment structure design to ensure stable operation of the device.
4.Equipped with two external current sampling channels, supporting various compensation modes such as low-voltage side sampling with low-voltage side compensation, high-voltage side sampling with low-voltage side compensation, and reactive component compensation.
5.Supports selectable compensation modes: reactive power compensation, or reactive power compensation + three-phase unbalance compensation.
6.Reactive power compensation capability: compensation rate ≥ 99%.
7.Unbalance compensation capability: unbalance degree after compensation ≤ 5%.
8.Dynamic response speed to load is millisecond level, enabling dynamic and accurate compensation for impact reactive power loads.

技术参数 Technical parameters

机型 Model	220V	220V	380V	500V	690V	800V
海拔高度 Altitude	<2000m,2000米以上按照GB/T3859.2降额使用 <2000 m; above 2000 m, derate according to GB/T 3859.2					
环境温度 Ambient temperature	-10~+50°C(40°C以上降容不超过30%) -10 to +50 °C (above 40 °C, capacity derating ≤30%)					
相对湿度 Relative humidity	≤90%，月最低温度25°C表面无凝露 ≤90% relative humidity, no condensation on the surface at a monthly minimum temperature of 25 °C					
污秽等级 Pollution degree	III级以下 Pollution degree ≤ Class III					
工作电压 Operating voltage	AC220V (-20%～+20%)	AC220V (-20%～+20%)	AC380V (-20%～+20%)	AC500V (-20%～+20%)	AC690V (-20%～+15%)	AC800V (-20%～ 850V Max)
工作频率 Operating frequency	50Hz/60Hz（45Hz～63Hz）					
额定补偿容量 Rated compensation capacity	5Kvar	3/5/7/ 10/17/25 /37/50/ 75Kvar	5/10/15/ 20/35/50/ 75/100/ 150Kvar	90Kvar	120Kvar	150Kvar
电网结构 Grid configuration	L/N	三相三线，三相四线 Three-phase three-wire Three-phase four-wire				三相三线 Three-phase three-wire
并联台数 Number of parallel units	不限 No restrictions					
整机效率 Overall efficiency	≥97%					
开关频率 Switching frequency	16kHz			12.8kHz		
功能选择 Function selection	无功补偿 Reactive power compensation	无功补偿、无功补偿+三相不平衡补偿 Rated overload 1.2 times for 60 seconds				无功补偿 Reactive power compensation
无功补偿率 Reactive compensation rate	无功补偿≥99% Reactive power compensation ≥ 99%					
不平衡补偿能力 Unbalance compensation capability	补偿后不平衡度≤5% Unbalance degree after compensation ≤ 5%					
全响应时间 Full response time	< 10ms					
噪音 Noise level	≤60dB	≤65dB		≤65dB		
通讯方式 Communication method	2 路 RS485 通信接口（支持 Wi-Fi） 2 RS485 communication interfaces (Wi-Fi supported)					
保护功能 Protection functions	过载、软/硬件过流、电网过欠压、电源故障、过温、频率异常等 Overload, software/hardware overcurrent, grid over-/undervoltage, power supply failure, overtemperature, frequency anomaly, etc.	过载、软/硬件过流、电网过欠压、电网电压不平衡、电源故障、过温、频率异常、短路保护等 Overload, software/hardware overcurrent, grid over-/undervoltage, grid voltage imbalance, power supply failure, overtemperature, frequency anomaly, short-circuit protection, etc.				
过载能力 Overload capability	额定1.2倍过载60秒 Rated overload 1.2 times for 60 seconds					
安装方式 Installation method	机架/壁挂 Rack-mount / Wall-mount					
进线方式 Cable entry	后进线(机架式)、上进线(壁挂式) Rack-mount / Wall-mount					
防护等级 Protection rating	IP20(IP54可定制) IP20 (IP54 available on request / customizable)					

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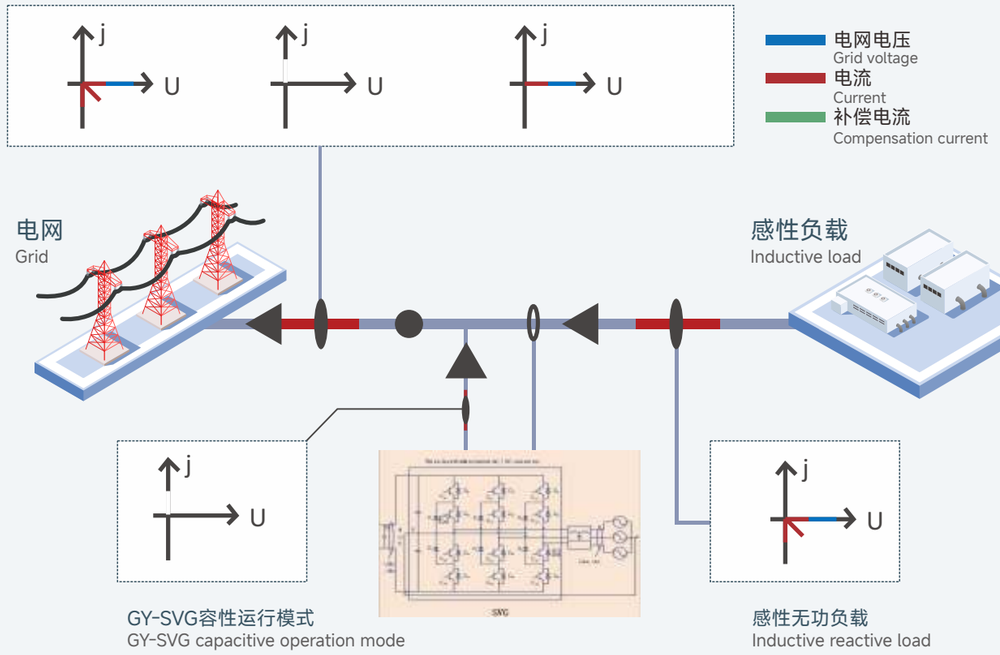
高配型静止无功发生装置

High-spec Static Var Generator

GY-SVG-PLUS

静止无功发生装置-高配机型（GY-SVG-PLUS）的工作原理是将电压源变流器通过滤波器并联在电网上，通过调节变流器交流侧输出电压的幅值和相位，针对电网系统中无功功率进行动态精准补偿，瞬态响应时间小于50us，全响应时间小于10ms，避免过补和欠补的发生。同时装置中性线零序电流滤波能力可达相线三倍，EMC电磁兼容性能更优，稳定性更好。

Working principle of the high-configuration model Static Var Generator (GY-SVG-PLUS):
The device connects a voltage source converter (VSC) to the power grid via a filter in parallel. By adjusting the amplitude and phase of the output voltage on the AC side of the converter, it dynamically and accurately compensates for reactive power in the grid system. The transient response time is less than 50 μs, and the full response time is less than 10 ms, thereby avoiding over-compensation and under-compensation. In addition, the device's neutral line zero-sequence current filtering capability can reach three times the phase line current. It also offers improved EMC electromagnetic compatibility performance and better stability.





壁挂式模块
Wall-mounted module



机架式模块
Rack-mounted module

性能特点 Performance characteristics

1）DSP+CPLD全数字控制核心，三电平拓扑技术，先进的无功检测算法和PWM控制策略。
2）模块化设计，可多模块并联，占地空间小、维护方便。
3）独立风道和独立板仓结构设计，保证设备的稳定运行。
4）具有两路外部电流采样通道，可支持低压侧采样低压侧补偿、高压侧采样低压侧补偿、无功分量补偿等多种补偿方式。
5）支持无功补偿、无功补偿+三相不平衡补偿模式可选。
6）无功补偿能力：补偿率≥99%。
7）不平衡补偿能力：补偿后不平衡度≤5%。
8）中性线零序电流滤波能力为相线三倍。
9）对负载的动态响应速度为毫秒级，能实现对冲击性无功功率负荷的动态精准补偿。
10）EMC电磁兼容RE、CE项目满足Class A测试标准。

1.DSP+CPLD full digital control core, three-level topology technology, advanced reactive power detection algorithm, and PWM control strategy.
2.Modular design, supports paralleling of multiple modules, small footprint, easy maintenance.
3.Independent air duct and independent board compartment structure design to ensure stable operation of the device.
4.Equipped with two external current sampling channels, supporting various compensation modes such as low-voltage side sampling with low-voltage side compensation, high-voltage side sampling with low-voltage side compensation, and reactive component compensation.
5.Supports selectable compensation modes: reactive power compensation, or reactive power compensation + three-phase unbalance compensation.
6.Reactive power compensation capability: compensation rate ≥ 99%.
7.Unbalance compensation capability: unbalance degree after compensation ≤ 5%.
8.Neutral line zero-sequence current filtering capability is three times that of the phase line current.
9.Dynamic response speed to load is millisecond level, enabling dynamic and accurate compensation for impact reactive power loads.
10.EMC electromagnetic compatibility: RE and CE items meet Class A test standard.

技术参数 Technical parameters

机型 Model	220V	380V
海拔高度 Altitude	<2000m,2000米以上按照GB/T3859.2降额使用 <2000 m; above 2000 m, derate according to GB/T 3859.2	
环境温度 Ambient temperature	-10~+50℃(40℃以上降容不超过30%) -10 to +50 °C (above 40 °C, capacity derating ≤30%)	
相对湿度 Relative humidity	≤90%，月最低温度25℃表面无凝露 ≤90% relative humidity, no condensation on the surface at a monthly minimum temperature of 25 °C	
污秽等级 Pollution degree	III级以下 Pollution degree ≤ Class III	
工作电压 Operating voltage	AC220V（-20%～+20%）	380V（-20%～+20%）
工作频率 Operating frequency	50Hz/60Hz（45Hz～63Hz）	
额定补偿容量 Rated compensation capacity	37kvar、50kvar	75kvar、100kvar
电网结构 Grid configuration	三相三线，三相四线 Three-phase three-wire, three-phase four-wire	
并联台数 Number of parallel units	不限 unlimited	
整机效率 Overall efficiency	≥97%	
开关频率 Switching frequency	16kHz	
功能选择 Function selection	无功补偿、无功补偿+三相不平衡补偿 Reactive power compensation / Reactive power compensation + three-phase unbalance compensation	
无功补偿率 Reactive compensation rate	无功补偿≥99% Reactive power compensation ≥99%	
不平衡补偿能力 Unbalance compensation capability	补偿后不平衡度≤5% Unbalance degree after compensation ≤5%	
全响应时间 Full response time	< 10ms	
噪音 Noise level	≤65dB	
通讯方式 Communication method	2路RS485通信接口（支持Wi-Fi） 2 RS485 communication ports (Wi-Fi supported)	
保护功能 Protection functions	过载、软/硬件过流、电网过欠压、电网电压不平衡、电源故障、过温、频率异常、短路保护、谐振保护等 Overload, software/hardware overcurrent, grid overvoltage/undervoltage, grid voltage unbalance, power supply failure, overtemperature, frequency anomaly, short circuit protection, resonance protection, etc.	
过载能力 Overload capability	额定1.2倍过载60秒 Rated 1.2 times overload for 60 seconds	
安装方式 Installation method	机架/壁挂 Rack / wall-mounted	
进线方式 Cable entry	后进线(机架式)、上进线(壁挂式) Rear cable entry (rack-mount), top cable entry (wall-mounted)	
防护等级 Protection rating	IP20(IP54可定制) IP20 (IP54 customizable)	
中性线滤波能力 Neutral line filtering capability	中性线滤波能力为相滤波能力的3倍 Neutral line filtering capacity is 3 times that of phase filtering capacity	
冷却方式 Cooling method	强制风冷 Forced air cooling	
电磁兼容 Electromagnetic compatibility	EMC电磁兼容RE、CE项目满足Class A测试标准 EMC (Electromagnetic Compatibility) – Radiated Emission (RE) and Conducted Emission (CE) meet Class A test standard	

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碳化硅型静止无功发生装置

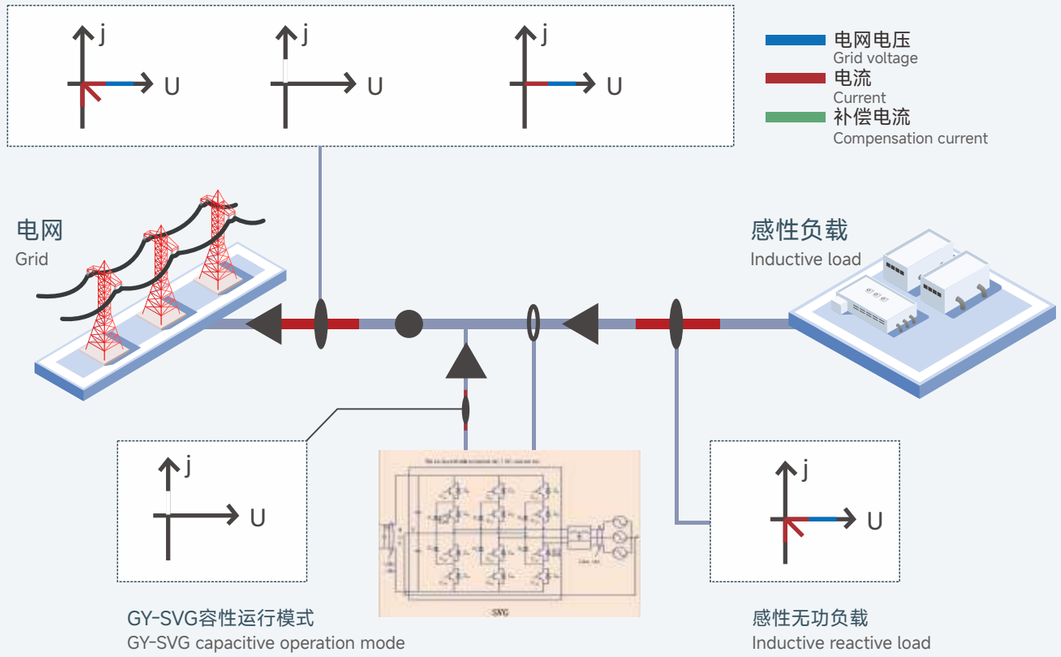
SiC-based Static Var Generator

GY-SVG-SiC

碳化硅静止无功发生装置（GY-SVG-SiC）以碳化硅功率器件为核心，将电压源变流器通过滤波器并联在电网上，其工作原理是通过调节变流器交流侧输出电压的幅值和相位，针对电网系统中无功功率进行动态精准补偿，瞬态响应时间小于50us，全响应时间小于10ms，避免过补欠补偿的发生。同时，装置峰值效率达98.5%以上，单柜可容纳8台模块，最大容量可达800kvar，安装维护方便。

Silicon Carbide Static Var Generator (GY-SVG-SiC)

Using silicon carbide (SiC) power devices as the core, the GY-SVG-SiC connects a voltage source converter (VSC) to the power grid via a filter in parallel. Its working principle is to dynamically and accurately compensate for reactive power in the grid system by adjusting the amplitude and phase of the output voltage on the AC side of the converter. The transient response time is less than 50 μs, and the full response time is less than 10 ms, thereby avoiding over-compensation and under-compensation. In addition, the device achieves a peak efficiency of over 98.5%. A single cabinet can accommodate up to 8 modules, with a maximum capacity of 800 kvar, offering easy installation and maintenance.





壁挂式模块
Wall-mounted module



机架式模块
Rack-mounted module

性能特点 Performance characteristics

1）DSP+CPLD全数字控制核心，三电平拓扑技术，先进的无功检测算法和PWM控制策略。
2）降低模块损耗，提升模块效率，峰值效率达98.5%以上。
3）高功率密度模块化设计，单柜可容纳8台模块，最大容量可达800kvar，安装维护方便。
4）具有两路外部电流采样通道，可支持低压侧采样低压侧补偿、高压侧采样低压侧补偿、无功分量补偿等多种补偿方式。
5）通过更高开关频率控制算法，减小输出波纹电流，提升动态响应速度。
6）利用SiC功率器件的更高耐压能力，同时简化热设计和电磁兼容设计，提升产品的可靠性。
7）无功补偿能力：补偿率≥99%。
8）不平衡补偿能力：补偿后不平衡度≤5%。
9）对负载的动态响应速度为毫秒级，能实现对冲击性无功功率负荷的动态精准补偿。
10）中性线零序电流滤波能力为相线三倍。
11）可设定100%限流输出，保证设备长期稳定运行。
12）支持无功补偿、无功补偿+三相不平衡补偿模式可选。

1.DSP+CPLD full-digital control core, three-level topology technology, advanced reactive power detection algorithm and PWM control strategy.
2.Reduced module losses, improved module efficiency, peak efficiency up to 98.5% or higher.
3.High power density modular design; a single cabinet can accommodate 8 modules with a maximum capacity of 800 kvar, easy installation and maintenance.
4.Equipped with two external current sampling channels, supporting various compensation modes such as low-voltage side sampling with low-voltage side compensation, high-voltage side sampling with low-voltage side compensation, and reactive component compensation.
5.Higher switching frequency control algorithm reduces output ripple current and improves dynamic response speed.
6.Utilizes the higher voltage withstand capability of SiC power devices while simplifying thermal design and electromagnetic compatibility (EMC) design, enhancing product reliability.
7.Reactive power compensation capability: compensation rate ≥99%.
8.Unbalance compensation capability: unbalance degree after compensation ≤5%.
9.Dynamic response speed to load is millisecond-level, enabling accurate dynamic compensation for impact reactive power loads.
10.Neutral line zero-sequence current filtering capacity is three times that of the phase line.
11.Supports 100% current-limiting output to ensure long-term stable operation of the equipment.
12.Supports selectable compensation modes: reactive power compensation only, or reactive power compensation + three-phase unbalance compensation.

技术参数 Technical parameters

机型 Model	220V	380V
海拔高度 Altitude	<2000m,2000米以上按照GB/T3859.2降额使用 <2000 m; above 2000 m, derate according to GB/T 3859.2	
环境温度 Ambient temperature	-10~+50°C(40°C以上降容不超过30%) -10 to +50 °C (above 40 °C, capacity derating ≤30%)	
相对湿度 Relative humidity	≤90%，月最低温度25°C表面无凝露 ≤90% relative humidity, no condensation on the surface at a monthly minimum temperature of 25 °C	
污秽等级 Pollution degree	III级以下 Pollution degree ≤ Class III	
工作电压 Operating voltage	AC220V（-20%～+20%）	380V（-20%～+20%）
工作频率 Operating frequency	50Hz/60Hz（45Hz～63Hz）	
额定补偿容量 Rated compensation capacity	37kvar、50kvar	75kvar、100kvar
电网结构 Grid configuration	三相三线，三相四线 Three-phase three-wire, three-phase four-wire	
并联台数 Number of parallel units	不限 unlimited	
整机效率 Overall efficiency	≥97%	
开关频率 Switching frequency	30kHz	
功能选择 Function selection	无功补偿、无功补偿+三相不平衡补偿 Reactive power compensation / Reactive power compensation + three-phase unbalance compensation	
无功补偿率 Reactive compensation rate	无功补偿≥99% Reactive power compensation ≥99%	
不平衡补偿能力 Unbalance compensation capability	补偿后不平衡度≤5% Unbalance degree after compensation ≤5%	
全响应时间 Full response time	< 10ms	
噪音 Noise level	≤65dB	
通讯方式 Communication method	2路RS485通信接口（支持Wi-Fi） 2 RS485 communication ports (Wi-Fi supported)	
保护功能 Protection functions	过载、软/硬件过流、电网过欠压、电网电压不平衡、电源故障、过温、频率异常、短路保护、谐振保护等 Overload, software/hardware overcurrent, grid overvoltage/undervoltage, grid voltage unbalance, power supply failure, overtemperature, frequency anomaly, short circuit protection, resonance protection, etc.	
过载能力 Overload capability	额定1.2倍过载60秒 Rated 1.2 times overload for 60 seconds	
安装方式 Installation method	机架/壁挂 Rack / wall-mounted	
进线方式 Cable entry	后进线(机架式)、上进线(壁挂式) Rear cable entry (rack-mount), top cable entry (wall-mounted)	
防护等级 Protection rating	IP20(IP54可定制) IP20 (IP54 customizable)	
中性线滤波能力 Neutral line filtering capability	中性线滤波能力为相滤波能力的3倍 Neutral line filtering capacity is 3 times that of phase filtering capacity	
冷却方式 Cooling method	强制风冷 Forced air cooling	
电磁兼容 Electromagnetic compatibility	EMC电磁兼容RE、CE项目满足Class A测试标准 EMC (Electromagnetic Compatibility) – Radiated Emission (RE) and Conducted Emission (CE) meet Class A test standard	

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静止无功发生装置 整柜

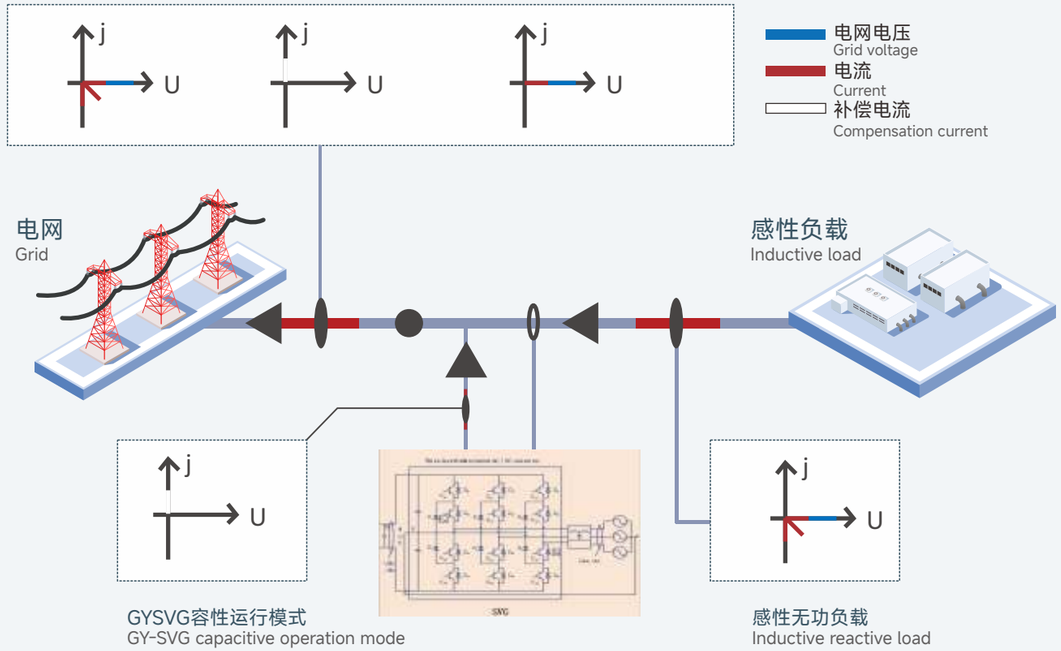
Static Var Generator - Cabinet

GY-SVG-cabinet

静止无功发生装置（GYSVG）主要由交流配电、GYSVG 模块、监控系统等组成。静止无功发生装置（GYSVG）将电压源变流器通过滤波器并联在电网上，通过调节变流器交流侧输出电压的幅值和相位，针对电网系统中无功功率进行动态精准补偿，瞬态响应时间小于 50us，全响应时间小于 10ms，避免过补和欠补的发生。采用模块化设计，集成度高，安装方便灵活。

The Static Var Generator (GYSVG) is mainly composed of an AC distribution section, GYSVG power modules, a monitoring system, and other auxiliary components. The device connects a voltage source converter (VSC) to the grid in parallel via a filter. By regulating the amplitude and phase of the output voltage on the AC side of the converter, it provides dynamic and precise compensation for reactive power in the power grid system. The transient response time is less than 50 μs, and the full response time is less than 10 ms, effectively preventing both over-compensation and under-compensation. Adopting a modular design, the system features high integration density and offers convenient, flexible installation.

系统图 System diagram



性能特点 Performance characteristics

（1）DSP+CPLD 全数字控制核心，三电平拓扑技术，先进的无功检测算法和 PWM 控制策略。
（2）模块化设计，可多模块并联，占地空间小、维护方便。
（3）独立风道和独立板仓结构设计，保证设备的稳定运行。
（4）具有两路外部电流采样通道，可支持低压侧采样低压侧补偿、高压侧采样低压侧补偿、无功分量补偿等多种补偿方式。
（5）支持无功补偿、无功补偿+三相不平衡补偿模式可选。
（6）无功补偿能力：补偿率≥99%。
（7）不平衡补偿能力：补偿后不平衡度≤5%。
（8）对负载的动态响应速度为毫秒级，能实现对冲击性负荷无功功率的动态精准补偿。

(1) DSP + CPLD all-digital control core, three-level topology technology, advanced reactive power detection algorithm, and PWM control strategy.
(2) Modular design, supporting parallel connection of multiple modules, with a small footprint and easy maintenance.
(3) Independent air duct and separate board compartment structure design to ensure stable and reliable operation of the equipment.
(4) Equipped with two external current sampling channels, supporting multiple compensation modes, including low-voltage side sampling with low-voltage side compensation, high-voltage side sampling with low-voltage side compensation, and reactive power component compensation.
(5) Supports selectable operating modes: reactive power compensation only, or reactive power compensation combined with three-phase unbalance compensation.
(6) Reactive power compensation capability: compensation rate ≥ 99%.
(7) Unbalance compensation capability: after compensation, the unbalance degree ≤ 5%.
(8) Dynamic response speed to loads is at millisecond level, enabling dynamic and precise reactive power compensation for impact loads.

技术参数 Technical parameters

机型 Model	220V	380V	500V	690V	800V
海拔高度 Altitude	<2000m,2000米以上按照GB/T3859.2降额使用 <2000 m; above 2000 m, derate according to GB/T 3859.2				
环境温度 Ambient temperature	-10~+50°C(40°C以上降容不超过30%) -10 to +50 °C (above 40 °C, capacity derating ≤30%)				
相对湿度 Relative humidity	≤90%，月最低温度25°C表面无凝露 ≤90% relative humidity, no condensation on the surface at a monthly minimum temperature of 25 °C				
污秽等级 Pollution degree	III级以下 Pollution degree ≤ Class III				
工作电压 Operating voltage	AC220V (-20%～+20%)	AC380V (-20%～+20%)	AC500V (-20%～+20%)	AC690V (-20%～+15%)	AC800V (-20%～850V Max)
工作频率 Operating frequency	50Hz/60Hz（45Hz～63Hz）				
额定补偿容量 Rated compensation capacity	50kvar～300kvar	100kvar～600kvar	90kvar～540kvar	100kvar～720kvar	150kvar～900kvar
电网结构 Grid configuration	三相三线，三相四线 Three-phase three-wire Three-phase four-wire				三相三线 Three-phase three-wire
并联台数 Number of parallel units	不限 No restrictions				
整机效率 Overall efficiency	≥97%				
开关频率 Switching frequency	16kHz		12.8kHz		
功能选择 ① Function selection	无功补偿、无功补偿+三相不平衡补偿 Reactive compensation/Reactive compensation+Three-phase unbalance compensation				无功补偿 Reactive compensation
无功补偿率 Reactive compensation rate	无功补偿≥95% Reactive power compensation ≥95%				
不平衡补偿能力 Unbalance compensation capability	补偿后不平衡度≤5% Unbalance degree after compensation ≤5%				
冷却方式 Cooling mode	强制风冷 Forced air cooling				
全响应时间 Full response time	无功＜10ms，谐波<40ms Reactive power: <10ms, Harmonics: <40ms				
噪音 Noise level	≤75dB				
通讯方式 Communication method	2 路 RS485 通信接口（支持 Wi-Fi） 2 RS485 communication interfaces (Wi-Fi supported)				
保护功能 Protection functions	过载、软/硬件过流、电网过欠压、电网电压不平衡、电源故障、过温、频率异常、短路保护等 Overload, software/hardware overcurrent, grid overvoltage/undervoltage, grid voltage unbalance, power supply failure, overtemperature, frequency anomaly, short circuit protection, etc.				
过载能力 Overload capability	额定1.2倍过载60秒 Rated overload 1.2 times for 60 seconds				
安装方式 Installation method	立式安装 vertical installation				
进线方式 Cable entry	上进线、下进线 Entering the upper line and entering the lower line				
防护等级 Protection rating	IP20(IP54可定制) IP20 (IP54 available on request / customizable)				
尺寸 Size	1250*1000*2200（最大容量尺寸，可根据不同容量调整） 1250 * 1000 * 2200 (maximum capacity size, adjustable according to different capacities)				
重量 Weight	与容量相关，最大 450KG Related to capacity, maximum 450KG			与容量相关，最大 620KG Related to capacity, maximum 620KG	

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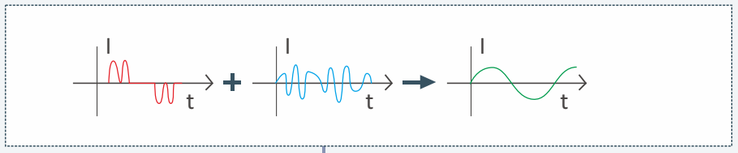
有源电力滤波装置

Active Harmonic Filter

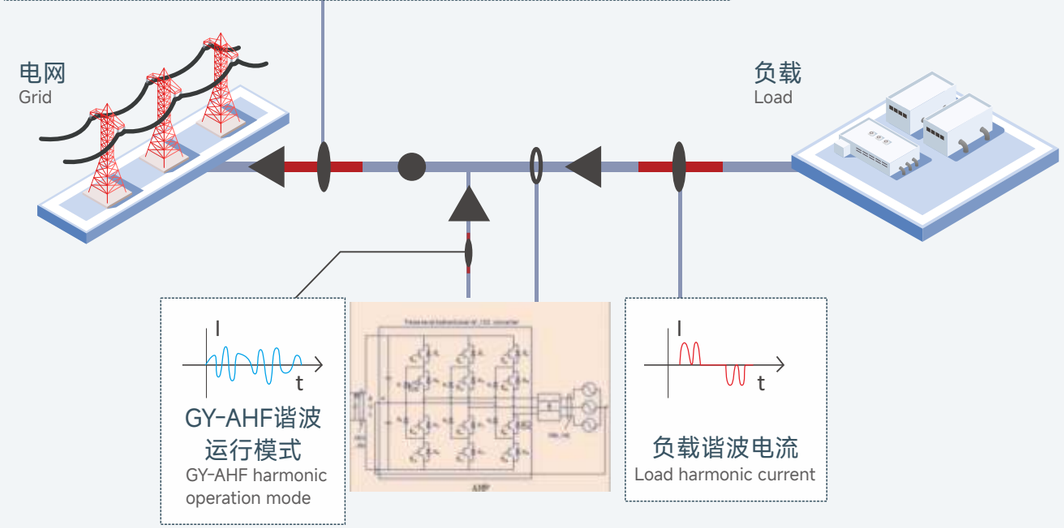
GY-AHF

有源电力滤波装置（GY-AHF）的工作原理是实时检测负载电流，基于指定次谐波电流检测算法将谐波电流逐次分离，按照设定的滤波百分比生成控制信号，驱动 IGBT 输出与负载谐波电流幅值相同相位相反的补偿电流，实现谐波补偿功能。

The working principle of the active power filter device (GY-AHF) is to detect the load current in real time. Based on a specified sub harmonic current detection algorithm, the harmonic current is gradually separated, and a control signal is generated according to the set filtering percentage to drive the IGBT to output a compensation current with the same amplitude and opposite phase as the load harmonic current, achieving harmonic compensation function.



电网电压
Grid voltage
电流
Current
补偿电流
Compensation current





机架式模块
Rack-mounted module



壁挂式模块
Wall-mounted module

性能特点 Performance characteristics

（1) DSP+CPLD 全数字控制核心、三电平拓扑技术、先进的谐波检测算法和 PWM 控制策略。
（2）模块化设计，可多模块并联，占地空间小、维护方便。
（3）独立风道和独立板仓结构设计，保证设备的稳定运行。
（4）可设定 100%限流输出，保证设备长期稳定运行。
（5）支持谐波补偿、谐波补偿+三相不平衡补偿模式可选。
（6）电流谐波补偿能力：补偿率≥95%。
（7）不平衡补偿能力：补偿后不平衡度≤5%。

(1) DSP+CPLD full digital control core, three-level topology technology, advanced harmonic detection algorithm, and PWM control strategy.
(2) Modular design allows multiple modules to be connected in parallel, with small footprint and easy maintenance.
(3) The independent air duct and independent plate compartment structure design ensure the stable operation of the equipment.
(4) 100% current limiting output can be set to ensure long-term stable operation of the equipment.
(5) Supports optional modes of harmonic compensation, harmonic compensation+three-phase unbalance compensation.
(6) Current harmonic compensation capability: compensation rate ≥ 95%.
(7) Unbalance compensation capability: The imbalance degree after compensation is ≤ 5%.

技术参数 Technical parameters

机型 Model	220V	220V	380V	500V	690V	800V
海拔高度 Altitude	<2000m,2000米以上按照GB/T3859.2降额使用 <2000 m; above 2000 m, derate according to GB/T 3859.2					
环境温度 Ambient temperature	-10~+50°C(40°C以上降容不超过30%) -10 to +50 °C (above 40 °C, capacity derating ≤30%)					
相对湿度 Relative humidity	≤90%，月最低温度25°C表面无凝露 ≤90% relative humidity, no condensation on the surface at a monthly minimum temperature of 25 °C					
污秽等级 Pollution degree	III级以下 Pollution degree ≤ Class III					
工作电压 Operating voltage	AC220V (-20%～+20%)	AC220V (-20%～+20%)	AC380V (-20%～+20%)	AC500V (-20%～+20%)	AC690V (-20%～+15%)	AC800V (-20%～ 850V Max)
工作频率 Operating frequency	50Hz/60Hz（45Hz～63Hz）					
额定补偿容量 Rated compensation capacity	25A	7/15/25/50/750/100/ 150/200A		100A		100A
电网结构 Grid configuration	L/N	三相三线，三相四线 Three-phase three-wire Three-phase four-wire				三相三线 Three-phase three-wire
并联台数 Number of parallel units	不限 No restrictions					
整机效率 Overall efficiency	≥97%					
开关频率 Switching frequency	16kHz			12.8kHz		
功能选择 Function selection	谐波补偿 harmonic compensation	谐波补偿、谐波补偿+三相不平衡补偿 Harmonic compensation, harmonic compensation+three-phase unbalance compensation				谐波补偿 harmonic compensation
电流谐波补偿范围 Current harmonic compensation	2～50 次，单次补偿率可调 2-50 times, with adjustable compensation rate per time					
电流谐波补偿能力 Current harmonic compensation	电流谐波补偿≥95% Current harmonic compensation ≥ 95%					
不平衡补偿能力 Unbalance compensation capability	补偿后不平衡度≤5% Unbalance degree after compensation ≤ 5%					
全响应时间 Full response time	< 40ms					
噪音 Noise level	≤60dB	≤65dB		≤65dB		
通讯方式 Communication method	2 路 RS485 通信接口（支持 Wi-Fi） 2 RS485 communication interfaces (Wi-Fi supported)					
保护功能 Protection functions Overload capability	过载、软/硬件过流、电网过欠压、电网电压不平衡、 电源故障、过温、频率异常、短路保护等 Overload, software/hardware overcurrent, grid over-/undervoltage, grid voltage imbalance, power supply failure, overtemperature, frequency anomaly, short-circuit protection, etc.					
过载能力 Installation method	额定1.2倍过载60秒 Rated overload 1.2 times for 60 seconds					
安装方式 Cable entry	机架/壁挂 Rack-mount / Wall-mount					
进线方式 Protection rating	后进线(机架式)、上进线(壁挂式) Rack-mount / Wall-mount					
防护等级	IP20(IP54可定制) IP20 (IP54 available on request / customizable)					

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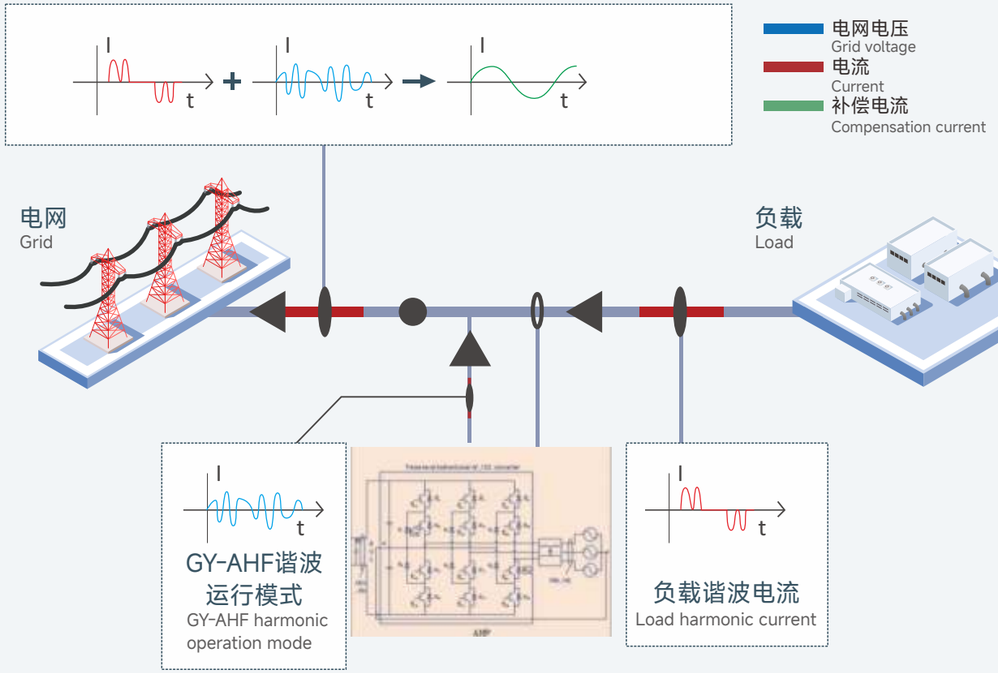
高配型有源电力滤波装置

High-spec Active Harmonic Filter

GY-AHF-PLUS

有源电力滤波装置-高配机型（GY-AHF-PLUS）的工作原理是将电压源变流器通过滤波器并联在电网上，通过实时检测负载的电流，基于指定次谐波电流检测算法将谐波电流逐次分离，按照设定的滤波百分比生成控制信号，驱动IGBT输出与负载谐波电流幅值相同相位相反的补偿电流，实现谐波补偿功能。同时，装置中性线零序电流滤波能力可达相线三倍，EMC电磁兼容性能更优，稳定性更好。

Working Principle of the High-configuration Model Active Power Filter (GY-AHF-PLUS):
The device connects a voltage source converter (VSC) to the power grid via a filter in parallel. By detecting the load current in real time, it separates the harmonic currents sequentially based on a specific-order harmonic current detection algorithm. According to the set filtering percentage, it generates control signals to drive the IGBT to output a compensation current that has the same amplitude as but opposite phase to the load harmonic current, thereby achieving harmonic compensation. In addition, the device's neutral line zero-sequence current filtering capability can reach three times the phase line current. It also offers better EMC electromagnetic compatibility performance and improved stability.



电网电压
Grid voltage
电流
Current
补偿电流
Compensation current



机架式模块
Rack-mounted module



壁挂式模块
Wall-mounted module

性能特点 Performance characteristics

1）DSP+CPLD全数字控制核心，三电平拓扑技术、先进的谐波检测算法和PWM控制策略。
2）模块化设计，可多模块并联，占地空间小、维护方便。
3）独立风道和独立板仓结构设计，保证设备的稳定运行。
4）可设定100%限流输出，保证设备长期稳定运行。
5）支持谐波补偿、谐波补偿+三相不平衡补偿模式可选。
6）不平衡补偿能力：补偿后不平衡度≤5%。
7）电流谐波补偿能力：补偿率≥95%；2～50次，单次补偿率可调。
8）中性线零序电流滤波能力为相线三倍。
9）EMC电磁兼容RE、CE项目满足Class A测试标准。

1.DSP+CPLD full-digital control core, three-level topology technology, advanced harmonic detection algorithm and PWM control strategy.
2.Modular design with multi-module parallel connection capability; small footprint and easy maintenance.
3.Independent air duct and independent board compartment structural design to ensure stable operation of the equipment.
4.Supports 100% current-limiting output to ensure long-term stable operation of the equipment.
5.Supports selectable compensation modes: harmonic compensation only, or harmonic compensation + three-phase unbalance compensation.
6.Unbalance compensation capability: unbalance degree after compensation ≤5%.
7.Current harmonic compensation capability: compensation rate ≥95%; 2nd to 50th harmonics, individual compensation rate adjustable.
8.Neutral line zero-sequence current filtering capacity is three times that of the phase line.
9.EMC (Electromagnetic Compatibility) – Radiated Emission (RE) and Conducted Emission (CE) meet Class A test standard.

技术参数 Technical parameters

机型 Model	220V	380V
海拔高度 Altitude	<2000m,2000米以上按照GB/T3859.2降额使用 <2000 m; above 2000 m, derate according to GB/T 3859.2	
环境温度 Ambient temperature	-10~+50°C(40°C以上降容不超过30%) -10 to +50 °C (above 40 °C, capacity derating ≤30%)	
相对湿度 Relative humidity	≤90%，月最低温度25°C表面无凝露 ≤90% relative humidity, no condensation on the surface at a monthly minimum temperature of 25 °C	
污秽等级 Pollution degree	III级以下 Pollution degree ≤ Class III	
工作电压 Operating voltage	AC220V（-20%～+20%）	380V（-20%～+20%）
工作频率 Operating frequency	50Hz/60Hz（45Hz～63Hz）	
额定补偿容量 Rated compensation capacity	100A、150A	
电网结构 Grid configuration	三相三线，三相四线 Three-phase three-wire, three-phase four-wire	
并联台数 Number of parallel units	不限 unlimited	
整机效率 Overall efficiency	≥97%	
开关频率 Switching frequency	16kHz	
功能选择 Function selection	谐波补偿、谐波补偿+三相不平衡补偿 Harmonic compensation, harmonic compensation + three-phase unbalance compensation	
电流谐波补偿能力 Current harmonic compensation capability	电流谐波补偿≥95% Reactive power compensation ≥95%	
电流谐波补偿范围 Current harmonic compensation range	2～50次，单次补偿率可调 2nd to 50th harmonics, adjustable individual compensation rate	
不平衡补偿能力 Unbalance compensation capability	补偿后不平衡度≤5% Unbalance degree after compensation ≤5%	
全响应时间 Full response time	< 40ms	
噪音 Noise level	≤65dB	
通讯方式 Communication method	2路RS485通信接口（支持Wi-Fi） 2 RS485 communication ports (Wi-Fi supported)	
保护功能 Protection functions	过载、软/硬件过流、电网过欠压、电网电压不平衡、电源故障、过温、频率异常、短路保护、谐振保护等 Overload, software/hardware overcurrent, grid overvoltage/undervoltage, grid voltage unbalance, power supply failure, overtemperature, frequency anomaly, short circuit protection, resonance protection, etc.	
过载能力 Overload capability	额定1.2倍过载60秒 Rated 1.2 times overload for 60 seconds	
安装方式 Installation method	机架/壁挂 Rack / wall-mounted	
进线方式 Cable entry	后进线(机架式)、上进线(壁挂式) Rear cable entry (rack-mount), top cable entry (wall-mounted)	
防护等级 Protection rating	IP20(IP54可定制) IP20 (IP54 customizable)	
中性线滤波能力 Neutral line filtering capability	中性线滤波能力为相滤波能力的3倍 Neutral line filtering capacity is 3 times that of phase filtering capacity	
冷却方式 Cooling method	强制风冷 Forced air cooling	
电磁兼容 Electromagnetic compatibility	EMC电磁兼容RE、CE项目满足Class A测试标准 EMC (Electromagnetic Compatibility) – Radiated Emission (RE) and Conducted Emission (CE) meet Class A test standard	

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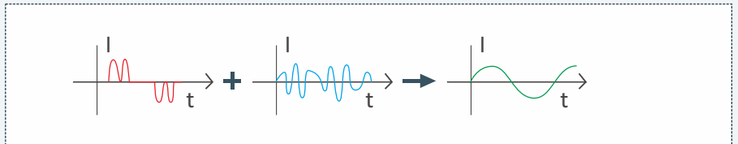
硅化碳型有源电力滤波装置

SiC-based Active Harmonic Filter

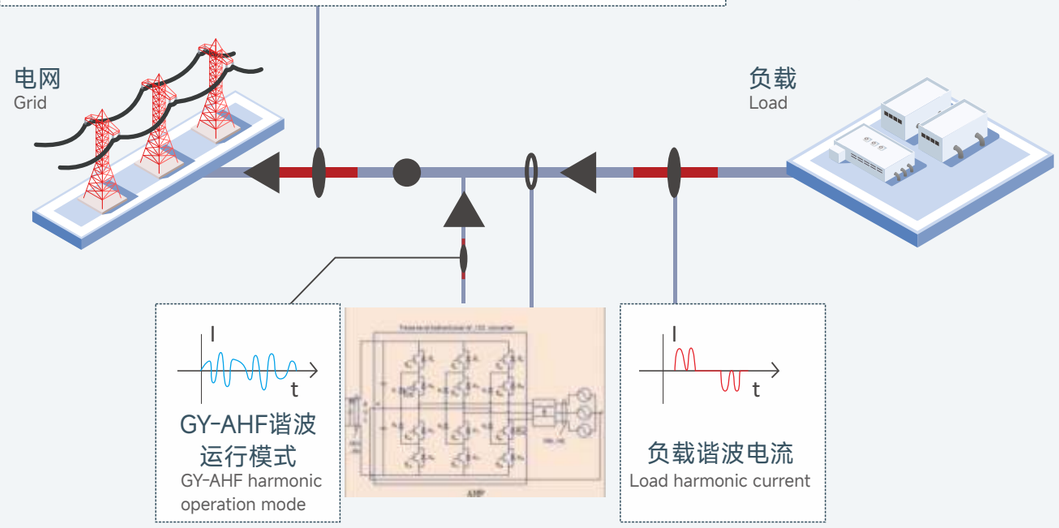
GY-AHF-SiC

碳化硅有源电力滤波装置（GY-AHF-SiC）以碳化硅功率器件为核心，将电压源变流器通过滤波器并联在电网上，其工作原理是实时检测负载电流，基于指定次谐波电流检测算法将谐波电流逐次分离，按照设定的滤波百分比生成控制信号，驱动IGBT输出与负载谐波电流幅值相同相位相反的补偿电流，实现谐波补偿功能。同时，装置峰值效率达98.5%以上，单柜可容纳8台模块，最大容量可达1200A，安装维护方便。

Silicon Carbide Active Power Filter (GY-AHF-SiC)
Using silicon carbide (SiC) power devices as the core, the GY-AHF-SiC connects a voltage source converter (VSC) to the power grid via a filter in parallel. Its working principle is to detect the load current in real time, separate the harmonic currents sequentially based on a specific-order harmonic current detection algorithm, and generate control signals according to the set filtering percentage. These signals drive the IGBT to output a compensation current that has the same amplitude as but opposite phase to the load harmonic current, thereby achieving harmonic compensation. In addition, the device achieves a peak efficiency of over 98.5%. A single cabinet can accommodate up to 8 modules, with a maximum capacity of 1200 A, offering easy installation and maintenance.



电网电压
Grid voltage
电流
Current
补偿电流
Compensation current





机架式模块
Rack-mounted module



壁挂式模块
Wall-mounted module

性能特点 Performance characteristics

1）DSP+CPLD全数字控制核心，三电平拓扑技术、先进的谐波检测算法和PWM控制策略。
2）降低模块损耗，提升模块效率，峰值效率达98.5%以上。
3）高功率密度模块化设计，单柜可容纳8台模块，最大容量可达1200A，安装维护方便。
4）通过更高开关频率控制算法，减小输出波纹电流，提升动态响应速度。
5）利用SiC功率器件的更高耐压能力，同时简化热设计和电磁兼容设计，提升产品的可靠性。
6）不平衡补偿能力：补偿后不平衡度≤5%。
7）电流谐波补偿能力：补偿率≥95%；2～50次，单次补偿率可调。
8）中性线零序电流滤波能力为相线三倍。
9）可设定100%限流输出，保证设备长期稳定运行。
10）支持谐波补偿、谐波补偿+三相不平衡补偿模式可选。

1.DSP+CPLD full-digital control core, three-level topology technology, advanced harmonic detection algorithm and PWM control strategy.
2.Reduced module losses, improved module efficiency, peak efficiency up to 98.5% or higher.
3.High power density modular design; a single cabinet can accommodate 8 modules with a maximum capacity of 1200A, easy installation and maintenance.
4.Higher switching frequency control algorithm reduces output ripple current and improves dynamic response speed.
5.Utilizes the higher voltage withstand capability of SiC power devices while simplifying thermal design and electromagnetic compatibility (EMC) design, enhancing product reliability.
6.Unbalance compensation capability: unbalance degree after compensation ≤5%.
7.Current harmonic compensation capability: compensation rate ≥95%; 2nd to 50th harmonics, individual compensation rate adjustable.
8.Neutral line zero-sequence current filtering capacity is three times that of the phase line.
9.Supports 100% current-limiting output to ensure long-term stable operation of the equipment.
10.Supports selectable compensation modes: harmonic compensation only, or harmonic compensation + three-phase unbalance compensation.

技术参数 Technical parameters

机型 Model	220V	380V
海拔高度 Altitude	<2000m,2000米以上按照GB/T3859.2降额使用 <2000 m; above 2000 m, derate according to GB/T 3859.2	
环境温度 Ambient temperature	-10~+50℃(40℃以上降容不超过30%) -10 to +50 °C (above 40 °C, capacity derating ≤30%)	
相对湿度 Relative humidity	≤90%，月最低温度25℃表面无凝露 ≤90% relative humidity, no condensation on the surface at a monthly minimum temperature of 25 °C	
污秽等级 Pollution degree	III级以下 Pollution degree ≤ Class III	
工作电压 Operating voltage	AC220V（-20%～+20%）	380V（-20%～+20%）
工作频率 Operating frequency	50Hz/60Hz（45Hz～63Hz）	
额定补偿容量 Rated compensation capacity	100A、150A	
电网结构 Grid configuration	三相三线，三相四线 Three-phase three-wire, three-phase four-wire	
并联台数 Number of parallel units	不限 unlimited	
整机效率 Overall efficiency	≥97%	
开关频率 Switching frequency	30kHz	
功能选择 Function selection	谐波补偿、谐波补偿+三相不平衡补偿 Harmonic compensation, harmonic compensation + three-phase unbalance compensation	
电流谐波补偿能力 Current harmonic compensation capability	电流谐波补偿≥95% Reactive power compensation ≥95%	
电流谐波补偿范围 Current harmonic compensation range	2～50次，单次补偿率可调 2nd to 50th harmonics, adjustable individual compensation rate	
不平衡补偿能力 Unbalance compensation capability	补偿后不平衡度≤5% Unbalance degree after compensation ≤5%	
全响应时间 Full response time	< 40ms	
噪音 Noise level	≤65dB	
通讯方式 Communication method	2路RS485通信接口（支持Wi-Fi） 2 RS485 communication ports (Wi-Fi supported)	
保护功能 Protection functions	过载、软/硬件过流、电网过欠压、电网电压不平衡、电源故障、过温、频率异常、短路保护、谐振保护等 Overload, software/hardware overcurrent, grid overvoltage/undervoltage, grid voltage unbalance, power supply failure, overtemperature, frequency anomaly, short circuit protection, resonance protection, etc.	
过载能力 Overload capability	额定1.2倍过载60秒 Rated 1.2 times overload for 60 seconds	
安装方式 Installation method	机架/壁挂 Rack / wall-mounted	
进线方式 Cable entry	后进线(机架式)、上进线(壁挂式) Rear cable entry (rack-mount), top cable entry (wall-mounted)	
防护等级 Protection rating	IP20(IP54可定制) IP20 (IP54 customizable)	
中性线滤波能力 Neutral line filtering capability	中性线滤波能力为相滤波能力的3倍 Neutral line filtering capacity is 3 times that of phase filtering capacity	
冷却方式 Cooling method	强制风冷 Forced air cooling	
电磁兼容 Electromagnetic compatibility	EMC电磁兼容RE、CE项目满足Class A测试标准 EMC (Electromagnetic Compatibility) – Radiated Emission (RE) and Conducted Emission (CE) meet Class A test standard	

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有源电力滤波装置 整柜

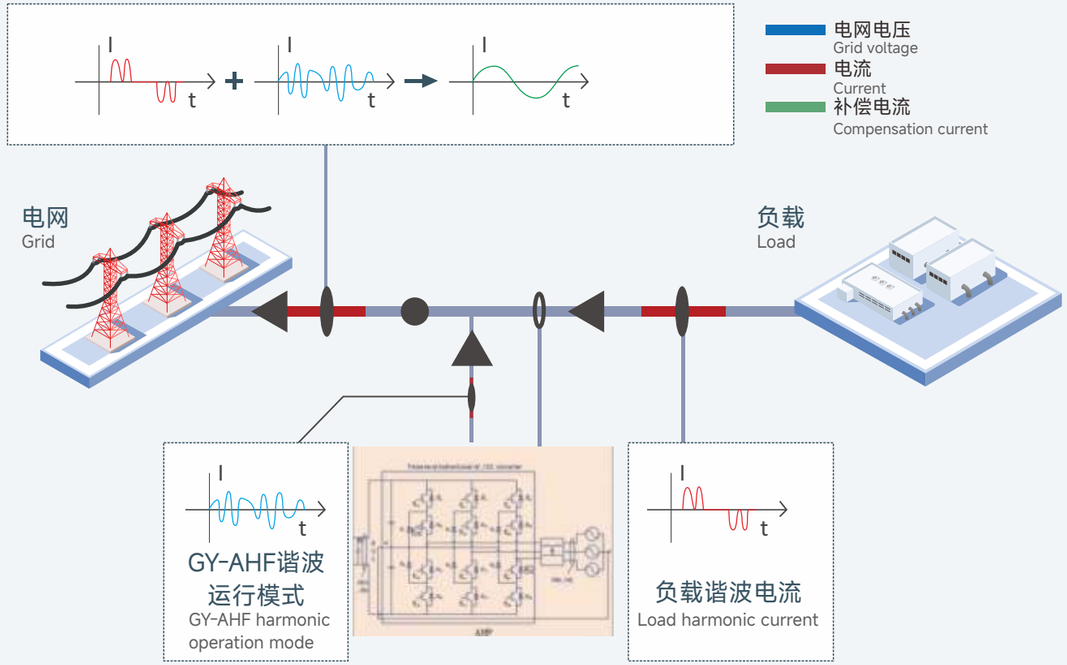
Active Harmonic Filter Cabinet

GY-AHF-cabinet

有源电力滤波装置（GY-AHF）主要由交流配电、AHF模块、监控系统等组成。有源电力滤波装置（GY-AHF）将电压源变流器通过滤波器并联在电网上，通过实时检测负载电流，基于指定次谐波电流检测算法将谐波电流逐次分离，按照设定的滤波百分比生成控制信号，驱动IGBT输出与负载谐波电流幅值相同相位相反的补偿电流，实现谐波补偿的功能。采用模块化设计，集成度高，安装方便灵活。

The active power filter device (GY-AHF) mainly consists of AC distribution, AHF module, monitoring system, etc. The active power filtering device (GY-AHF) connects the voltage source inverter in parallel to the power grid through a filter. By detecting the load current in real time and using a specified sub harmonic current detection algorithm, the harmonic current is gradually separated. According to the set filtering percentage, a control signal is generated to drive the IGBT to output a compensation current with the same amplitude and opposite phase as the load harmonic current, achieving the function of harmonic compensation. Adopting modular design, high integration, easy and flexible installation.

系统图 System diagram



性能特点 Performance characteristics

（1）DSP+CPLD全数字控制核心，三电平拓扑技术，先进的谐波检测算法和PWM控制策略。
（2）模块化设计，可多模块并联，占地空间小、维护方便。
（3）独立风道和独立板仓结构设计，保证设备的稳定运行。
（4）可设定100%限流输出，保证设备长期稳定运行。
（5）支持谐波补偿、谐波补偿+三相不平衡补偿模式可选。
（6）电流谐波补偿能力：补偿率≥95%。
（7）不平衡补偿能力：补偿后不平衡度≤5%。

(1) DSP+CPLD full digital control core, three-level topology technology, advanced harmonic detection algorithm and PWM control strategy.
(2) Modular design allows multiple modules to be connected in parallel, with small footprint and easy maintenance.
(3) The independent air duct and independent plate compartment structure design ensure the stable operation of the equipment.
(4) 100% current limiting output can be set to ensure long-term stable operation of the equipment.
(5) Supports optional modes of harmonic compensation, harmonic compensation+three-phase unbalance compensation.
(6) Current harmonic compensation capability: compensation rate ≥ 95%.
(7) Unbalance compensation capability: The imbalance degree after compensation is ≤ 5%.

技术参数 Technical parameters

机型 Model	220V	380V	500V	690V	800V
海拔高度 Altitude	<2000m,2000米以上按照GB/T3859.2降额使用 <2000 m; above 2000 m, derate according to GB/T 3859.2				
环境温度 Ambient temperature	-10~+50°C(40°C以上降容不超过30%) -10 to +50 °C (above 40 °C, capacity derating ≤30%)				
相对湿度 Relative humidity	≤90%，月最低温度25°C表面无凝露 ≤90% relative humidity, no condensation on the surface at a monthly minimum temperature of 25 °C				
污秽等级 Pollution degree	III级以下 Pollution degree ≤ Class III				
工作电压 Operating voltage	AC220V (-20%～+20%)	AC380V (-20%～+20%)	AC500V (-20%～+20%)	AC690V (-20%～+15%)	AC800V (-20%～850V Max)
工作频率 Operating frequency	50Hz/60Hz（45Hz～63Hz）				
额定补偿容量 Rated compensation capacity	100A~900A		100A~600A		100A~600A
电网结构 Grid configuration	三相三线，三相四线 Three-phase three-wire, three-phase four-wire				三相三线 Three-phase three-wire
整机效率 Overall efficiency	≥97%				
开关频率 Switching frequency	16kHz		12.8kHz		
功能选择 Function selection	谐波补偿、谐波补偿+三相不平衡补偿 Harmonic compensation, harmonic compensation + three-phase unbalance compensation				谐波补偿 Harmonic compensation
电流谐波补偿能力 Current harmonic compensation capability	电流谐波补偿≥95% Reactive power compensation ≥95%				
电流谐波补偿范围 Current harmonic compensation range	2～50次，单次补偿率可调 2nd to 50th harmonics, adjustable individual compensation rate				
不平衡补偿能力 Unbalance compensation capability	补偿后不平衡度≤5% Unbalance degree after compensation ≤5%				无 NO
全响应时间 Full response time	< 40ms				
噪音 Noise level	≤75dB				
通讯方式 Communication method	2路RS485通信接口（支持Wi-Fi） 2 RS485 communication ports (Wi-Fi supported)				
保护功能 Protection functions	过载、软/硬件过流、电网过欠压、电网电压不平衡、电源故障、过温、频率异常、短路保护等 Overload, software/hardware overcurrent, grid overvoltage/undervoltage, grid voltage unbalance, power supply failure, overtemperature, frequency anomaly, short circuit protection.				
过载能力 Overload capability	额定1.2倍过载60秒 Rated 1.2 times overload for 60 seconds				
安装方式 Installation method	立式安装 vertical installation				
进线方式 Cable entry	上进线、下进线 Entering the upper line and entering the lower line				
防护等级 Protection rating	IP20(IP54可定制) IP20 (IP54 customizable)				
冷却方式 Cooling method	强制风冷 Forced air cooling				
重量 Weight	与容量相关，最大 450KG Related to capacity, maximum 450KG		与容量相关，最大 620KG Related to capacity, maximum 620KG		

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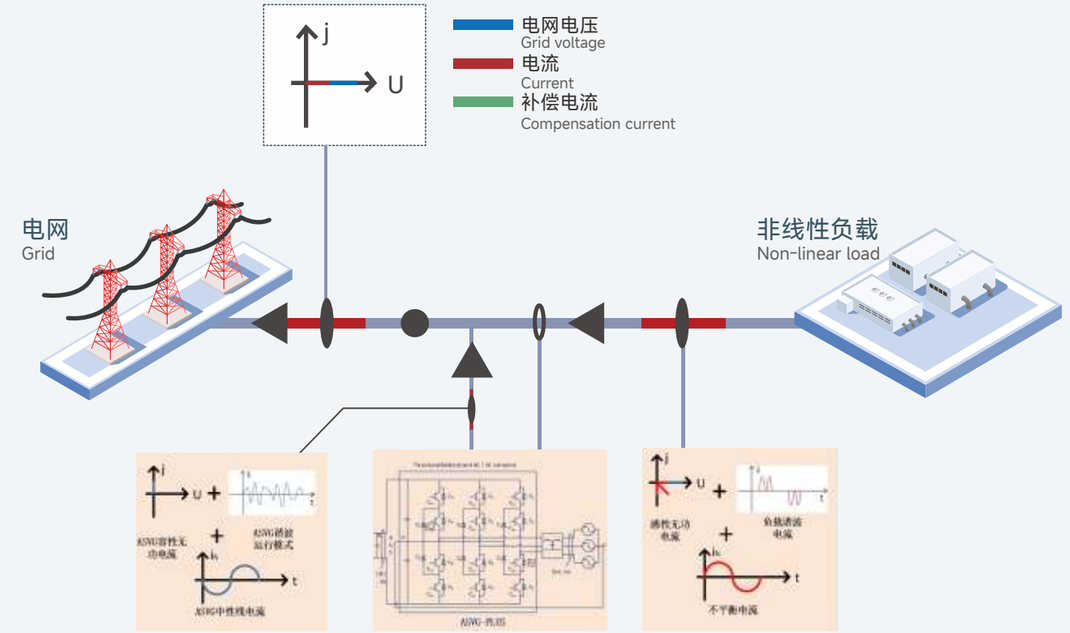
静止无功发生装置

Advanced Static Var Generator

GY-ASVG

增强型静止无功发生装置（GYASVG）的工作原理是将电压源变流器通过滤波器并联在电网上，其工作原理是通过实时检测负载的电流，基于先进的无功、谐波及三相有功功率的检测与控制算法，生成对应的 IGBT驱动信号，实现对无功电流、谐波电流以及三相不平衡电流的综合补偿。

The working principle of the Enhanced Static Var Generator (GYASVG) is to connect the voltage source inverter in parallel to the power grid through a filter. Its working principle is to detect the current of the load in real time, based on advanced detection and control algorithms for reactive power, harmonics, and three-phase active power, and generate corresponding IGBT drive signals to achieve comprehensive compensation for reactive current, harmonic current, and three-phase unbalanced current.





壁挂式模块

Wall-mounted module



机架式模块

Rack-mounted module

性能特点 Performance characteristics

1）DSP+CPLD 全数字控制核心，三电平拓扑技术。
2）模块化设计，可多模块并联，占地空间小、维护方便。
3）独立风道和独立板仓结构设计，保证设备的稳定运行。
4）具有两路外部电流采样通道，可支持低压侧采样低压侧补偿、高压侧采样低压侧补偿、无功分量补偿等多种补偿方式。
5）支持无功补偿、谐波补偿、三相不平衡补偿任意一种、两种或三种搭配可选。
6）无功补偿能力：补偿率≥99%。
7）不平衡补偿能力：补偿后不平衡度≤5%。
8）电流谐波补偿能力：补偿率≥95%；2～50 次，单次补偿率可调。
9）中性线零序电流滤波能力为相线两倍（三倍可定制）。

1) DSP+CPLD full digital control core, three-level topology technology.
2) Modular design allows multiple modules to be connected in parallel, with small footprint and easy maintenance.
3) The independent air duct and independent plate compartment structure design ensure the stable operation of the equipment.
4) It has two external current sampling channels and can support various compensation methods such as low-voltage side sampling, low-voltage side compensation, high-voltage side sampling, and reactive power component compensation.
5) Support any one, two or three combinations of reactive power compensation, harmonic compensation, and three-phase imbalance compensation.
6) Reactive power compensation capability: compensation rate ≥ 99%.
7) Unbalance compensation capability: The imbalance degree after compensation is ≤ 5%.
8) Current harmonic compensation capability: compensation rate ≥ 95%; 2-50 times, with adjustable compensation rate per time.
9) The zero sequence current filtering capability of the neutral line is twice that of the phase line (three times can be customized).

技术参数 Technical parameters

机型 Model	220V	220V	380V	500V	690V	800V
海拔高度 Altitude	<2000m,2000米以上按照GB/T3859.2降额使用 <2000 m; above 2000 m, derate according to GB/T 3859.2					
环境温度 Ambient temperature	-10~+50°C(40°C以上降容不超过30%) -10 to +50 °C (above 40 °C, capacity derating ≤30%)					
相对湿度 Relative humidity	≤90%，月最低温度25°C表面无凝露 ≤90% relative humidity, no condensation on the surface at a monthly minimum temperature of 25 °C					
污秽等级 Pollution degree	III级以下 Pollution degree ≤ Class III					
工作电压 Operating voltage	AC220V (-20%～+20%)	AC220V (-20%～+20%)	AC380V (-20%～+20%)	AC500V (-20%～+20%)	AC690V (-20%～+15%)	AC800V (-20%～850V Max)
工作频率 Operating frequency	50Hz/60Hz（45Hz～63Hz）					
额定补偿容量 Rated compensation capacity	5Kvar	3/5/7/ 10/17/25 /37/50/ 75Kvar	5/10/15/ 20/35/50/ 75/100/ 150Kvar	90Kvar	120Kvar	150Kvar
电网结构 Grid configuration	L/N	三相三线，三相四线 Three-phase three-wire Three-phase four-wire				三相三线 Three-phase three-wire
并联台数 Number of parallel units	不限 No restrictions					
整机效率 Overall efficiency	≥97%					
开关频率 Switching frequency	32kHz	16kHz		12.8kHz		
功能选择 Function selection	A、B、A+B、B+A	A、B、A+B、B+A、B+C、A+C、B+C+A、A+C+B				A、B、A+B、B+A
无功补偿率 Reactive compensation rate	无功补偿≥99% Reactive power compensation ≥ 99%					
不平衡补偿能力 Unbalance compensation capability	无 No	补偿后不平衡度≤5% Unbalance degree after compensation ≤ 5%				无 No
中性线滤波能力 Neutral line filtering capability	中性线滤波能力为相滤波能力的 2 倍（3 倍可定制） The neutral line filtering capability is twice that of the phase filtering capability (3 times can be customized)					
全响应时间 Full response time	无功＜10ms，谐波<40ms Reactive power<10ms, harmonic<40ms					
噪音 Noise level	≤60dB	≤65dB		≤65dB		
通讯方式 Communication method	2 路 RS485 通信接口（支持 Wi-Fi） 2 RS485 communication interfaces (Wi-Fi supported)					
保护功能 Protection functions	过载、软/硬件过流、电网过欠压、电网电压不平衡、电源故障、过温、频率异常、短路保护等 Overload, software/hardware overcurrent, grid over-/undervoltage, grid voltage imbalance, power supply failure, overtemperature, frequency anomaly, short-circuit protection, etc.					
过载能力 Overload capability	额定1.2倍过载60秒 Rated overload 1.2 times for 60 seconds					
安装方式 Installation method	机架/壁挂 Rack-mount / Wall-mount					
进线方式 Cable entry	后进线(机架式)、上进线(壁挂式) Rack-mount / Wall-mount					
防护等级 Protection rating	IP20(IP54可定制) IP20 (IP54 available on request / customizable)					

① A:无功补偿 Reactive compensation　B:谐波补偿 Harmonic compensation
C:三相不平衡补偿 Three-phase unbalance compensation

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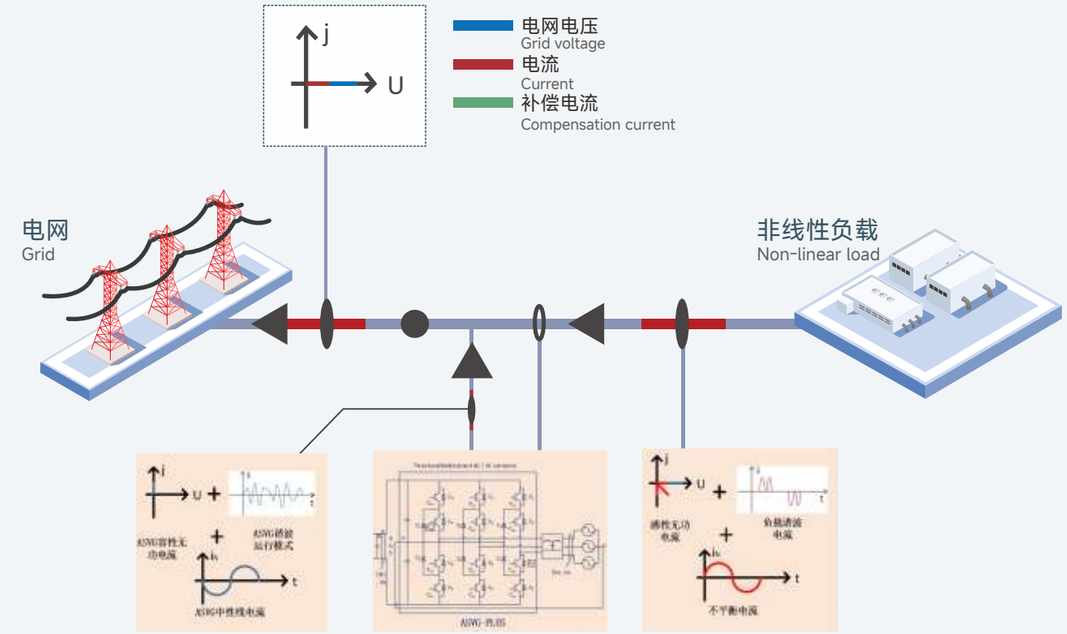
高配型静止无功发生装置

High-spec Advanced Static Var Generator

GY-ASVG-PLUS

增强型静止无功发生装置-高配机型（GY-ASVG-PLUS）的工作原理是将电压源变流器通过滤波器并联在电网上，通过实时检测负载的电流，基于先进的无功、谐波及三相有功功率的检测与控制算法，生成对应的 IGBT 驱动信号，实现对无功电流、谐波电流以及三相不平衡电流的综合补偿。同时，装置中性线零序电流滤波能力可达相线三倍，EMC 电磁兼容性能更优，稳定性更好。

Working Principle of the High-configuration Model Enhanced Static Var Generator (GY-ASVG-PLUS):
The device connects a voltage source converter (VSC) to the power grid via a filter in parallel. By detecting the load current in real time and based on advanced detection and control algorithms for reactive power, harmonics, and three-phase active power, it generates corresponding IGBT drive signals to achieve comprehensive compensation of reactive current, harmonic current, and three-phase unbalanced current. In addition, the device's neutral line zero-sequence current filtering capability can reach three times the phase line current. It also offers better EMC electromagnetic compatibility performance and improved stability.





壁挂式模块
Wall-mounted module



机架式模块
Rack-mounted module

性能特点 Performance characteristics

1）DSP+CPLD 全数字控制核心，三电平拓扑技术。
2）模块化设计，可多模块并联，占地空间小、维护方便。
3）独立风道和独立板仓结构设计，保证设备的稳定运行。
4）具有两路外部电流采样通道，可支持低压侧采样低压侧补偿、高压侧采样低压侧补偿、无功分量补偿等多种补偿方式。
5）支持无功补偿、谐波补偿、三相不平衡补偿任意一种、两种或三种搭配可选。 6）无功补偿能力：补偿率≥99%。
7）不平衡补偿能力：补偿后不平衡度≤5%。
8）电流谐波补偿能力：补偿率≥95%；2～50 次，单次补偿率可调。
9）中性线零序电流滤波能力为相线三倍。
10）EMC 电磁兼容 RE、CE 项目满足 Class A 测试标准。

1.DSP+CPLD full-digital control core, three-level topology technology.
Modular design with multi-module parallel connection; small footprint, easy maintenance.
2.Independent air duct and independent board compartment design to ensure stable operation of the equipment.
3.Equipped with two external current sampling channels, supporting various compensation modes such as low-voltage side sampling with low-voltage side compensation, high-voltage side sampling with low-voltage side compensation, and reactive component compensation.
4.Supports any one, any two, or all three of reactive power compensation, harmonic compensation, and three-phase unbalance compensation as selectable options.
5.Reactive power compensation capability: compensation rate ≥99%.
6.Unbalance compensation capability: unbalance degree after compensation ≤5%.
7.Current harmonic compensation capability: compensation rate ≥95%; 2nd to 50th
8.harmonics, individual compensation rate adjustable.
9.Neutral line zero-sequence current filtering capacity is three times that of the phase line.
10.EMC (Electromagnetic Compatibility) – RE and CE meet Class A test standard.

技术参数 Technical parameters

机型 Model	220V	380V
海拔高度 Altitude	<2000m,2000米以上按照GB/T3859.2降额使用 <2000 m; above 2000 m, derate according to GB/T 3859.2	
环境温度 Ambient temperature	-10~+50°C(40°C以上降容不超过30%) -10 to +50 °C (above 40 °C, capacity derating ≤30%)	
相对湿度 Relative humidity	≤90%，月最低温度25°C表面无凝露 ≤90% relative humidity, no condensation on the surface at a monthly minimum temperature of 25 °C	
污秽等级 Pollution degree	III级以下 Pollution degree ≤ Class III	
工作电压 Operating voltage	AC220V(-20%～+20%)	AC380V(-20%～+20%)
工作频率 Operating frequency	50Hz/60Hz（45Hz～63Hz）	
额定补偿容量 Rated compensation capacity	37Kvar、50Kvar	75Kvar、100Kvar
电网结构 Grid configuration	三相三线，三相四线 Three-phase three-wire Three-phase four-wire	
并联台数 Number of parallel units	不限 No restrictions	
整机效率 Overall efficiency	≥98%	
开关频率 Switching frequency	16kHz	
功能选择 ① Function selection	A、B、A+B、B+A、B+C、A+C、B+C+A、A+C+B	
无功补偿率 Reactive compensation rate	无功补偿≥99% Reactive power compensation ≥99%	
不平衡补偿能力 Unbalance compensation capability	补偿后不平衡度≤5% Unbalance degree after compensation ≤5%	
电流谐波补偿能力	电流谐波补偿≥95% Current harmonic compensation ≥95%	
中性线滤波能力 Neutral line filtering capability	中性线滤波能力为相滤波能力的 3 倍 Neutral line filtering capacity is 3 times that of phase filtering capacity.	
全响应时间 Full response time	无功＜10ms，谐波<40ms Reactive power: <10ms, Harmonics: <40ms	
冷却方式 Cooling mode	强制风冷 Forced air cooling	
噪音 Noise level	≤65dB	
通讯方式 Communication method	2 路 RS485 通信接口（支持 Wi-Fi） 2 RS485 communication interfaces (Wi-Fi supported)	
保护功能 Protection functions	过载、软/硬件过流、电网过欠压、电网电压不平衡、电源故障、过温、频率异常、短路保护、谐振保护等 Overload, software/hardware overcurrent, grid overvoltage/undervoltage, grid voltage unbalance, power supply failure, overtemperature, frequency anomaly, short circuit protection, resonance protection, etc.	
过载能力 Overload capability	额定1.2倍过载60秒 Rated overload 1.2 times for 60 seconds	
安装方式 Installation method	机架/壁挂 Rack-mount / Wall-mount	
进线方式 Cable entry	后进线(机架式)、上进线(壁挂式) Rack-mount / Wall-mount	
防护等级 Protection rating	IP20(IP54可定制) IP20 (IP54 available on request / customizable)	
尺寸（W*D*H） Size	500*730*240mm	
电磁兼容 Electromagnetic Compatibility	EMC 电磁兼容 RE、CE 项目满足 Class A 测试标准 EMC (Electromagnetic Compatibility) – RE and CE meet Class A test standard.	

① A:无功补偿 Reactive compensation　B:谐波补偿 Harmonic compensation
C:三相不平衡补偿 Three-phase unbalance compensation

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硅化碳型静止无功发生装置

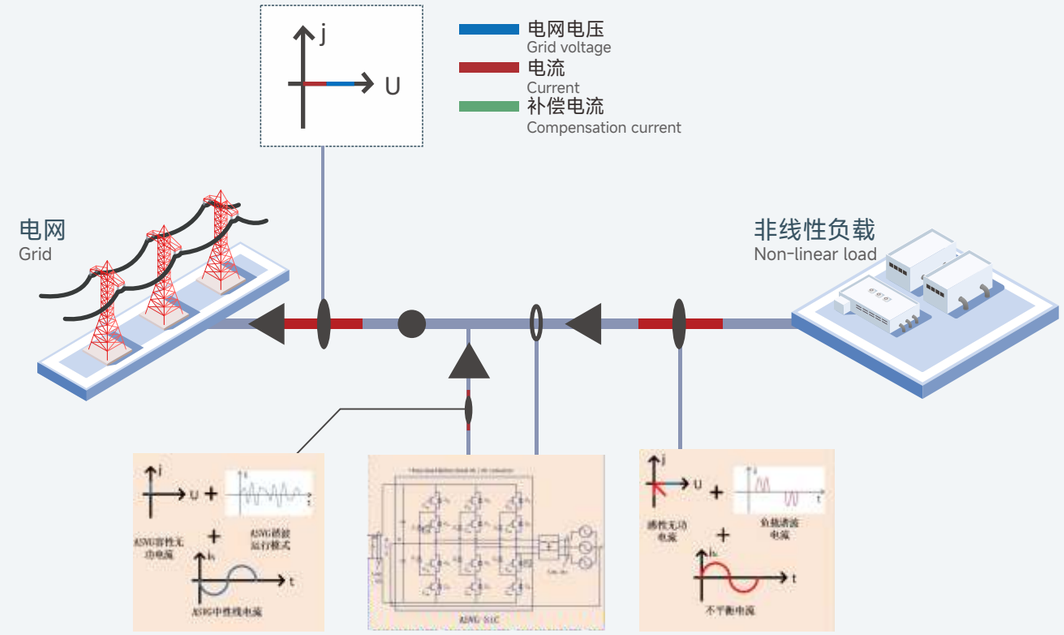
SiC-based Advanced Static Var Generator

GY-ASVG-SiC

碳化硅增强型静止无功发生装置（GY-ASVG-SiC）以碳化硅功率器件为核心，将电压源变流器通过滤波器并联在电网上，其工作原理是通过实时检测负载的电流，基于先进的无功、谐波及三相有功功率的检测与控制算法，生成对应的 IGBT 驱动信号，实现对无功电流、谐波电流以及三相不平衡有功功率的综合补偿。同时，装置峰值效率达 98.5%以上，单柜可容纳 8 台模块，最大容量可达 800kvar，安装维护方便。

Silicon Carbide Enhanced Static Var Generator (GY-ASVG-SiC)

Using silicon carbide (SiC) power devices as the core, the GYASVG-SiC connects a voltage source converter (VSC) to the power grid via a filter in parallel. Its working principle is to detect the load current in real time and, based on advanced detection and control algorithms for reactive power, harmonics, and three-phase active power, generate corresponding IGBT drive signals to achieve comprehensive compensation of reactive current, harmonic current, and three-phase unbalanced active power. In addition, the device achieves a peak efficiency of over 98.5%. A single cabinet can accommodate up to 8 modules, with a maximum capacity of 800 kvar, offering easy installation and maintenance.





壁挂式模块

Wall-mounted module



机架式模块

Rack-mounted module

性能特点 Performance characteristics

1）DSP+CPLD 全数字控制核心，三电平拓扑技术。2）降低模块损耗，提升模块效率，峰值效率达 98.5%以上。3）高功率密度模块化设计，单柜可容纳 8 台模块，最大容量可达 800kvar，安装维护方便。4）具有两路外部电流采样通道，可支持低压侧采样低压侧补偿、高压侧采样低压侧补偿、无功分量补偿等多种补偿方式。5）通过更高开关频率控制算法，减小输出波纹电流，提升动态响应速度。6）利用 SiC 功率器件的更高耐压能力，同时简化热设计和电磁兼容设计，提升产品的可靠性。7）无功补偿能力：补偿率≥99%。8）不平衡补偿能力：补偿后不平衡度≤5%。9）电流谐波补偿能力：补偿率≥95%；2～50 次，单次补偿率可调。10）中性线零序电流滤波能力为相线三倍。11）可设定 100%限流输出，保证设备长期稳定运行。12）支持无功补偿、谐波补偿、三相不平衡补偿任意一种、两种或三种搭配可选。

1)DSP+CPLD full-digital control core, three-level topology technology. 2)Reduced module losses, improved module efficiency; peak efficiency up to 98.5% or higher.
3)High power density modular design; a single cabinet can accommodate 8 modules with a maximum capacity of 800 kvar, easy installation and maintenance.
4)Equipped with two external current sampling channels, supporting various compensation modes such as low-voltage side sampling with low-voltage side compensation, high-voltage side sampling with low-voltage side compensation, and reactive component compensation. 5)Higher switching frequency control algorithm reduces output ripple current and improves dynamic response speed. 6)Utilizes the higher voltage withstand capability of SiC power devices while simplifying thermal design and electromagnetic compatibility (EMC) design, enhancing product reliability. 7)Reactive power compensation capability: compensation rate ≥99%. 8)Unbalance compensation capability: unbalance degree after compensation ≤5%. 9)Current harmonic compensation capability: compensation rate ≥95%; 2nd to 50th harmonics, individual compensation rate adjustable. 10)Neutral line zero-sequence current filtering capacity is three times that of the phase line. 11)Supports 100% current-limiting output to ensure long-term stable operation of the equipment.
12)Supports any one, any two, or all three of reactive power compensation, harmonic compensation, and three-phase unbalance compensation as selectable options.

技术参数 Technical parameters

机型 Model	220V	380V
海拔高度 Altitude	<2000m,2000米以上按照GB/T3859.2降额使用 <2000 m; above 2000 m, derate according to GB/T 3859.2	
环境温度 Ambient temperature	-10~+50°C(40°C以上降容不超过30%) -10 to +50 °C (above 40 °C, capacity derating ≤30%)	
相对湿度 Relative humidity	≤90%，月最低温度25°C表面无凝露 ≤90% relative humidity, no condensation on the surface at a monthly minimum temperature of 25 °C	
污秽等级 Pollution degree	III级以下 Pollution degree ≤ Class III	
工作电压 Operating voltage	AC220V(-20%～+20%)	AC380V(-20%～+20%)
工作频率 Operating frequency	50Hz/60Hz（45Hz～63Hz）	
额定补偿容量 Rated compensation capacity	37Kvar、50Kvar	75Kvar、100Kvar
电网结构 Grid configuration	三相三线，三相四线 Three-phase three-wire Three-phase four-wire	
并联台数 Number of parallel units	不限 No restrictions	
整机效率 Overall efficiency	≥98%	
开关频率 Switching frequency	30kHz	
功能选择 ① Function selection	A、B、A+B、B+A、B+C、A+C、B+C+A、A+C+B	
无功补偿率 Reactive compensation rate	无功补偿≥99% Reactive power compensation ≥99%	
不平衡补偿能力 Unbalance compensation capability	补偿后不平衡度≤5% Unbalance degree after compensation ≤5%	
电流谐波补偿能力	电流谐波补偿≥95% Current harmonic compensation ≥95%	
中性线滤波能力 Neutral line filtering capability	中性线滤波能力为相滤波能力的 3 倍 Neutral line filtering capacity is 3 times that of phase filtering capacity.	
全响应时间 Full response time	无功＜10ms，谐波<40ms Reactive power: <10ms, Harmonics: <40ms	
冷却方式 Cooling mode	强制风冷 Forced air cooling	
噪音 Noise level	≤65dB	
通讯方式 Communication method	2 路 RS485 通信接口（支持 Wi-Fi） 2 RS485 communication interfaces (Wi-Fi supported)	
保护功能 Protection functions	过载、软/硬件过流、电网过欠压、电网电压不平衡、电源故障、过温、频率异常、短路保护、谐振保护等 Overload, software/hardware overcurrent, grid overvoltage/undervoltage, grid voltage unbalance, power supply failure, overtemperature, frequency anomaly, short circuit protection, resonance protection, etc.	
过载能力 Overload capability	额定1.2倍过载60秒 Rated overload 1.2 times for 60 seconds	
安装方式 Installation method	机架/壁挂 Rack-mount / Wall-mount	
进线方式 Cable entry	后进线(机架式)、上进线(壁挂式) Rack-mount / Wall-mount	
防护等级 Protection rating	IP20(IP54可定制) IP20 (IP54 available on request / customizable)	
尺寸（W*D*H） Size	500*600*100mm	

① A:无功补偿 Reactive compensation　B:谐波补偿 Harmonic compensation
C:三相不平衡补偿 Three-phase unbalance compensation

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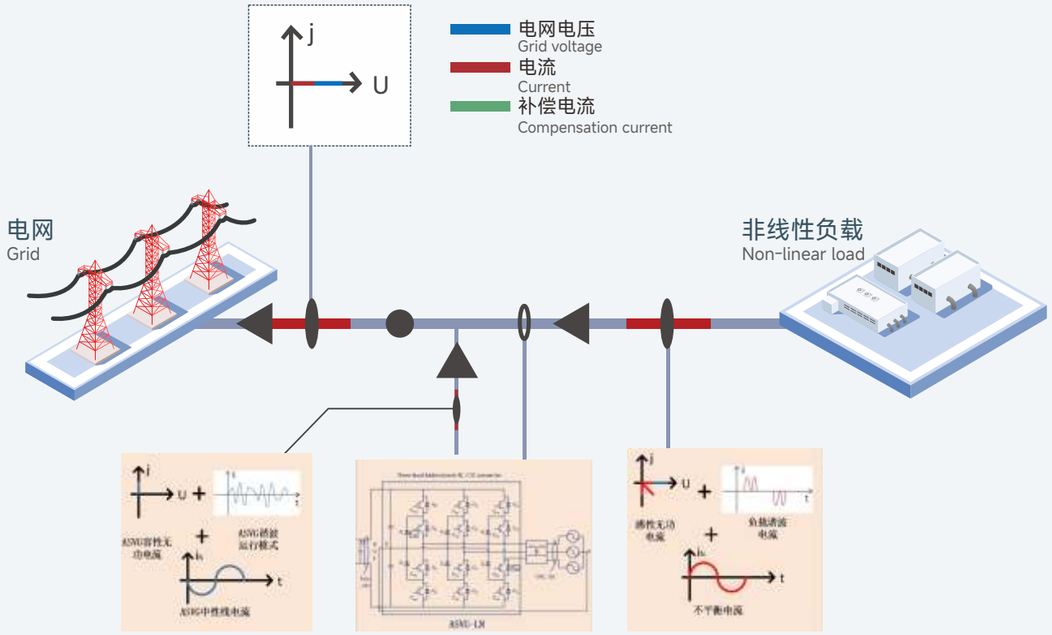
低噪音增强型静止无功发生装置

Low-noise Advanced Static Var Generator

GY-ASVG-LN

低噪音增强型静止无功发生装置（GY-ASVG-LN）采用低噪音设计，将电压源变流器通过滤波器并联在电网上，其工作原理是通过实时检测负载的电流，基于先进的无功、谐波及三相有功功率的检测与控制算法，生成对应的 IGBT 驱动信号，实现对无功电流、谐波电流以及三相不平衡有功功率的综合补偿。装置噪音在 45dB以内，同时支持内置网侧采样 CT，安装维护方便。

Low-Noise Enhanced Static Var Generator (GY-ASVG-LN)
The device adopts a low-noise design and connects a voltage source converter (VSC) to the power grid via a filter in parallel. Its working principle is to detect the load current in real time and, based on advanced detection and control algorithms for reactive power, harmonics, and three-phase active power, generate corresponding IGBT drive signals to achieve comprehensive compensation of reactive current, harmonic current, and three-phase unbalanced active power. The device noise level is within 45 dB. It also supports a built-in grid-side sampling CT (current transformer), offering easy installation and maintenance.







性能特点 Performance characteristics

1）DSP+CPLD 全数字控制核心、三电平拓扑技术。2）低噪音设计，噪音在 45dB 以内，同时支持内置网侧采样 CT，安装维护方便。3）模块化设计，可多模块并联，占地空间小、维护方便。4）支持无功补偿、谐波补偿、三相不平衡补偿任意一种、两种或三种搭配可选。5）无功补偿能力：补偿率≥99%。6）不平衡补偿能力：补偿后不平衡度≤5%。7）电流谐波补偿能力：补偿率≥95%；2～50 次，单次补偿率可调。8）可设定 100%限流输出，保证设备长期稳定运行。

1)DSP+CPLD full-digital control core, three-level topology technology.
2)Low noise design with noise level ≤45 dB; also supports built-in grid-side sampling CT, easy installation and maintenance.
3)Modular design with multi-module parallel connection; small footprint, easy maintenance.
4)Supports any one, any two, or all three of reactive power compensation, harmonic compensation, and three-phase unbalance compensation as selectable options.
5)Reactive power compensation capability: compensation rate ≥99%. 6)Unbalance compensation capability: unbalance degree after compensation ≤5%.
7)Current harmonic compensation capability: compensation rate ≥95%; 2nd to 50th harmonics, individual compensation rate adjustable.
8)Supports 100% current-limiting output to ensure long-term stable operation of the equipment.

技术参数 Technical parameters

机型 Model	220V	380V
海拔高度 Altitude	<2000m,2000米以上按照GB/T3859.2降额使用 <2000 m; above 2000 m, derate according to GB/T 3859.2	
环境温度 Ambient temperature	-10~+50°C(40°C以上降容不超过30%) -10 to +50 °C (above 40 °C, capacity derating ≤30%)	
相对湿度 Relative humidity	≤90%，月最低温度25°C表面无凝露 ≤90% relative humidity, no condensation on the surface at a monthly minimum temperature of 25 °C	
污秽等级 Pollution degree	III级以下 Pollution degree ≤ Class III	
工作电压 Operating voltage	AC220V(-20%～+20%)	AC380V(-20%～+20%)
工作频率 Operating frequency	50Hz/60Hz（45Hz～63Hz）	
额定补偿容量 Rated compensation capacity	2Kvar、3Kvar、5Kvar	3Kvar、5Kvar、10Kvar
电网结构 Grid configuration	三相三线，三相四线 Three-phase three-wire Three-phase four-wire	三相四线 Three-phase four-wire
负载电流范围 Load current range	0~100A	
并联台数 Number of parallel units	2kvar（不支持并联）、3kvar、5kvar（不限） 2kvar (no parallel), 3kvar, 5kvar (parallel allowed)	3kvar（不支持并联）、5kvar、10kvar（不限） 3kvar (no parallel), 5kvar, 10kvar (parallel allowed)
整机效率 Overall efficiency	≥97%	
开关频率 Switching frequency	30kHz（2kvar）、16kHz（3kvar、5kvar）	30kHz（3kvar）、16kHz（5kvar、10kvar）
功能选择 ① Function selection	A、B、A+B、B+A、B+C、A+C、B+C+A、A+C+B	
无功补偿率 Reactive compensation rate	无功补偿≥99% Reactive power compensation ≥99%	
不平衡补偿能力 Unbalance compensation capability	补偿后不平衡度≤5% Unbalance degree after compensation ≤5%	
电流谐波补偿能力	电流谐波补偿≥95% Current harmonic compensation ≥95%	
中性线滤波能力 Neutral line filtering capability	中性线滤波能力为相滤波能力的 1.5倍 Neutral line filtering capacity is 1.5 times that of phase filtering capacity.	
全响应时间 Full response time	无功＜10ms，谐波<40ms Reactive power: <10ms, Harmonics: <40ms	
冷却方式 Cooling mode	强制风冷 Forced air cooling	
噪音 Noise level	2kvar≤38dB / 3kvar≤40dB / 5kvar≤45dB	3kvar≤38dB / 5kvar≤40dB / 10kvar≤45dB
通讯方式 Communication method	2 路 RS485 通信接口（支持 Wi-Fi） 2 RS485 communication interfaces (Wi-Fi supported)	
保护功能 Protection functions	过载、软/硬件过流、电网过欠压、电网电压不平衡、电源故障、过温、频率异常、短路保护、谐振保护等 Overload, software/hardware overcurrent, grid overvoltage/undervoltage, grid voltage unbalance, power supply failure, overtemperature, frequency anomaly, short circuit protection, resonance protection, etc.	
过载能力 Overload capability	额定1.2倍过载60秒 Rated overload 1.2 times for 60 seconds	
安装方式 Installation method	机架/壁挂 Rack-mount / Wall-mount	
进线方式 Cable entry	后进线(机架式)、上进线(壁挂式) Rack-mount / Wall-mount	
防护等级 Protection rating	IP20(IP54可定制) IP20 (IP54 available on request / customizable)	
尺寸（W*D*H） Size	390*525*90.2mm	

① A:无功补偿 Reactive compensation B:谐波补偿 Harmonic compensation
C:三相不平衡补偿 Three-phase unbalance compensation

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IU型静止无功发生装置

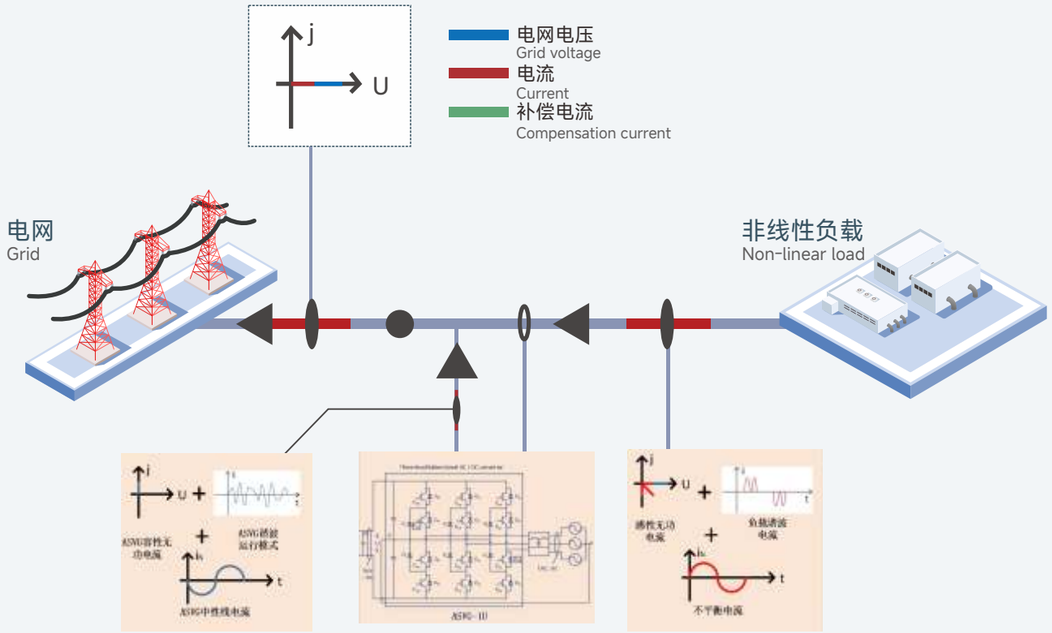
1U Rack-mount Advanced Static Var Generator

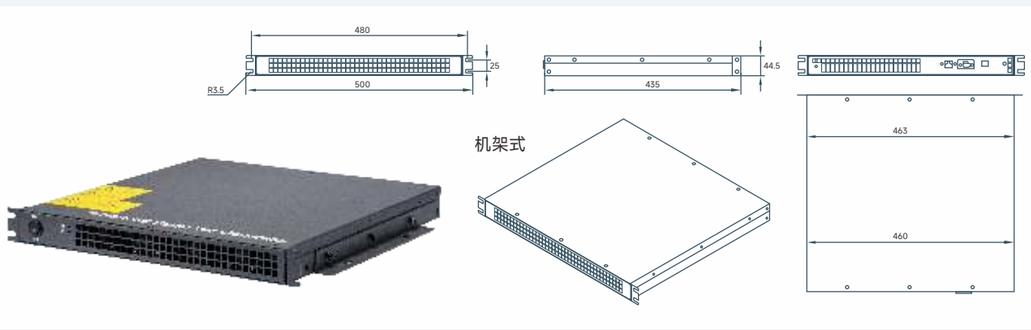
GY-ASVG-IU

增强型静止无功发生装置（GY-ASVG-1U）采用 1U 厚度设计，将电压源变流器通过滤波器并联在电网上，其工作原理是通过实时检测负载的电流，基于先进的无功、谐波及三相有功功率的检测与控制算法，生成对应的 IGBT 驱动信号，实现对无功电流、谐波电流以及三相不平衡有功功率的综合补偿。

Enhanced Static Var Generator (GY-ASVG-1U)

The device features a 1U thickness design and connects a voltage source converter (VSC) to the power grid via a filter in parallel. Its working principle is to detect the load current in real time and, based on advanced detection and control algorithms for reactive power, harmonics, and three-phase active power, generate corresponding IGBT drive signals to achieve comprehensive compensation of reactive current, harmonic current, and three-phase unbalanced active power.





性能特点 Performance characteristics

1）DSP+CPLD 全数字控制核心、三电平拓扑技术、先进的谐波检测算法和 PWM 控制策略。2）低噪音设计，噪音小于 60dB。3）模块化设计，可多模块并联，占地空间小、维护方便。4）支持无功补偿、谐波补偿、三相不平衡补偿任意一种、两种或三种搭配可选。5）无功补偿能力：≥99%。6）不平衡补偿能力：补偿后不平衡度≤5%。7）电流谐波补偿能力：补偿率≥95%；2～50 次，单次补偿率可调。8）可设定100%限流输出，保证设备长期稳定运行

1.DSP+CPLD full-digital control core, three-level topology technology, advanced harmonic detection algorithm and PWM control strategy.
2.Low noise design, noise level <60dB.
3.Modular design with multi-module parallel connection; small footprint, easy maintenance.
4.Supports any one, any two, or all three of reactive power compensation, harmonic compensation, and three-phase unbalance compensation as selectable options.
5.Reactive power compensation capability: ≥99%.
6.Unbalance compensation capability: unbalance degree after compensation ≤5%.
7.Current harmonic compensation capability: compensation rate ≥95%; 2nd to 50th harmonics, individual compensation rate adjustable.
8.Supports 100% current-limiting output to ensure long-term stable operation of the equipment.

技术参数 Technical parameters

机型 Model	220V	380V
海拔高度 Altitude	<2000m,2000米以上按照GB/T3859.2降额使用 <2000 m; above 2000 m, derate according to GB/T 3859.2	
环境温度 Ambient temperature	-10~+50°C(40°C以上降容不超过30%) -10 to +50 °C (above 40 °C, capacity derating ≤30%)	
相对湿度 Relative humidity	≤90%，月最低温度25°C表面无凝露 ≤90% relative humidity, no condensation on the surface at a monthly minimum temperature of 25 °C	
污秽等级 Pollution degree	III级以下 Pollution degree ≤ Class III	
工作电压 Operating voltage	AC220V(-20%～+20%)	AC380V(-20%～+20%)
工作频率 Operating frequency	50Hz/60Hz（45Hz～63Hz）	
额定补偿容量 Rated compensation capacity	3Kvar	5Kvar
电网结构 Grid configuration	三相三线，三相四线 Three-phase three-wire Three-phase four-wire	
并联台数 Number of parallel units	不限 No restrictions	
整机效率 Overall efficiency	≥97%	
开关频率 Switching frequency	16kHz	
功能选择 ① Function selection	A、B、A+B、B+A、B+C、A+C、B+C+A、A+C+B	
无功补偿率 Reactive power compensation rate	无功补偿≥99% Reactive power compensation ≥99%	
不平衡补偿能力 Reactive compensation rate	补偿后不平衡度≤5% Unbalance degree after compensation ≤5%	
电流谐波补偿能力 Unbalance compensation capability	电流谐波补偿≥95% Current harmonic compensation ≥95%	
中性线滤波能力 Neutral line filtering capability	中性线滤波能力为相滤波能力的 1.5倍 Neutral line filtering capacity is 1.5 times that of phase filtering capacity.	
全响应时间 Full response time	无功＜10ms，谐波<40ms Reactive power: <10ms, Harmonics: <40ms	
噪音 Noise level	≤60dB	
通讯方式 Communication method	2 路 RS485 通信接口（支持 Wi-Fi） 2 RS485 communication interfaces (Wi-Fi supported)	
保护功能 Protection functions	过载、软/硬件过流、电网过欠压、电网电压不平衡、电源故障、过温、频率异常、短路保护、谐振保护等 Overload, software/hardware overcurrent, grid overvoltage/undervoltage, grid voltage unbalance, power supply failure, overtemperature, frequency anomaly, short circuit protection, resonance protection, etc.	
过载能力 Overload capability	额定1.2倍过载60秒 Rated overload 1.2 times for 60 seconds	
安装方式 Installation method	机架/壁挂 Rack-mount / Wall-mount	
进线方式 Cable entry	后进线(机架式)、上进线(壁挂式) Rack-mount / Wall-mount	
防护等级 Protection rating	IP20(IP54可定制) IP20 (IP54 available on request / customizable)	
尺寸（W*D*H） Size	460*435*44.5mm	

① A:无功补偿 Reactive compensation　B:谐波补偿 Harmonic compensation
C:三相不平衡补偿 Three-phase unbalance compensation

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静止无功发生装置 整柜

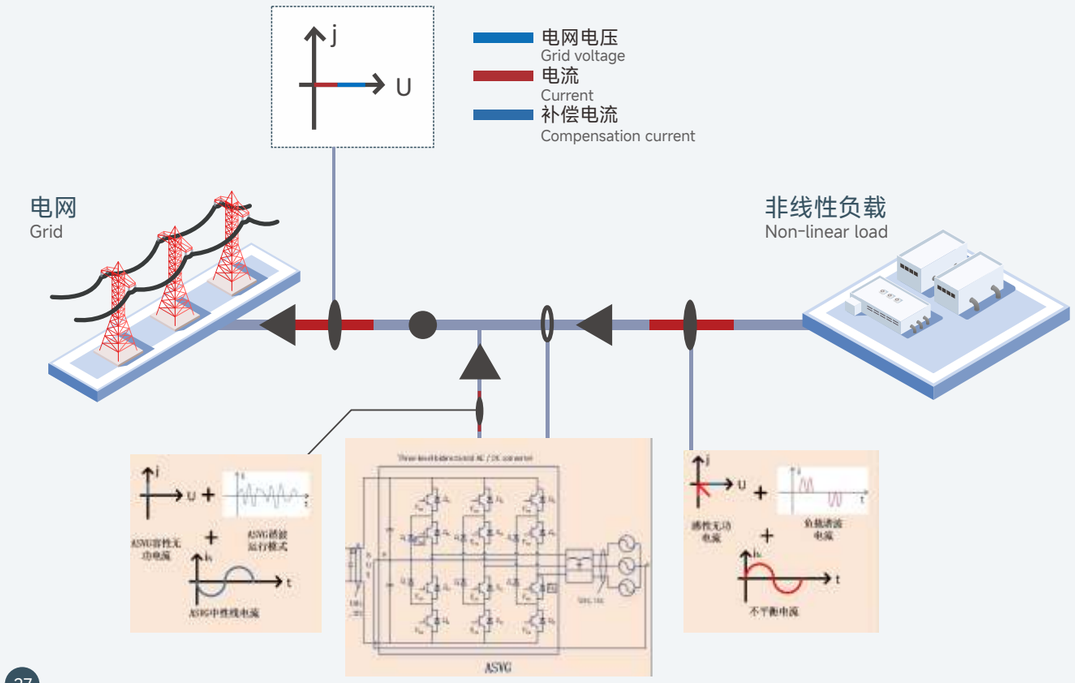
Advanced Static Var Generator - Cabinet

GY-ASVG

增强型静止无功发生装置（GY-ASVG）主要由交流配电、ASVG模块、监控系统等组成。增强型静止无功发生装置（GY-ASVG）将电压源变流器通过滤波器并联在电网上，其工作原理是通过实时检测负载的电流，基于先进的无功、谐波及三相有功功率的检测与控制算法，生成对应的IGBT驱动信号，实现对无功电流、谐波电流以及三相不平衡电流的综合补偿。采用模块化设计，集成度高，安装方便灵活。

Enhanced Static Var Generator (GY-ASVG) is mainly composed of an AC distribution unit, ASVG modules, a monitoring system, etc. The GYASVG connects a voltage source converter (VSC) to the power grid via a filter in parallel. Its working principle is to detect the load current in real time and, based on advanced detection and control algorithms for reactive power, harmonics, and three-phase active power, generate corresponding IGBT drive signals to achieve comprehensive compensation of reactive current, harmonic current, and three-phase unbalanced current. The device adopts a modular design, offering high integration density as well as convenient and flexible installation.

系统图：



性能特点 Performance characteristics

（1）DSP+CPLD全数字控制核心，三电平拓扑技术。（2）模块化设计，可多模块并联，占地空间小、维护方便。（3）独立风道和独立板仓结构设计，保证设备的稳定运行。（4）具有两路外部电流采样通道，可支持低压侧采样低压侧补偿、高压侧采样低压侧补偿、无功分量补偿等多种补偿方式。（5）支持无功补偿、谐波补偿、三相不平衡补偿任意一种、两种或三种搭配可选。（6）无功补偿能力：补偿率≥99%。（7）不平衡补偿能力：补偿后不平衡度≤5%。（8）电流谐波补偿能力：补偿率≥95%。2～50次，单次补偿率可调。（9）中性线零序电流滤波能力为相线两倍（三倍可定制）。

(1) DSP+CPLD full-digital control core, three-level topology technology.
(2) Modular design with multi-module parallel connection; small footprint, easy maintenance.
(3) Independent air duct and independent board compartment design to ensure stable operation of the equipment.
(4) Equipped with two external current sampling channels, supporting various compensation modes such as low-voltage side sampling with low-voltage side compensation, high-voltage side sampling with low-voltage side compensation, and reactive component compensation.
(5) Supports any one, any two, or all three of reactive power compensation, harmonic compensation, and three-phase unbalance compensation as selectable options.
(6) Reactive power compensation capability: compensation rate ≥99%.
(7) Unbalance compensation capability: unbalance degree after compensation ≤5%.
(8) Current harmonic compensation capability: compensation rate ≥95%; 2nd to 50th harmonics, individual compensation rate adjustable.
(9) Neutral line zero-sequence current filtering capacity is twice that of the phase line (triple customizable).

技术参数 Technical parameters

机型 Model	220V	380V	500V	690V	800V
海拔高度 Altitude	<2000m,2000米以上按照GB/T3859.2降额使用 <2000 m; above 2000 m, derate according to GB/T 3859.2				
环境温度 Ambient temperature	-10~+50°C(40°C以上降容不超过30%) -10 to +50 °C (above 40 °C, capacity derating ≤30%)				
相对湿度 Relative humidity	≤90%，月最低温度25°C表面无凝露 ≤90% relative humidity, no condensation on the surface at a monthly minimum temperature of 25 °C				
污秽等级 Pollution degree	III级以下 Pollution degree ≤ Class III				
工作电压 Operating voltage	AC220V (-20%～+20%)	AC380V (-20%～+20%)	AC500V (-20%～+20%)	AC690V (-20%～+15%)	AC800V (-20%～850V Max)
工作频率 Operating frequency	50Hz/60Hz（45Hz～63Hz）				
额定补偿容量 Rated compensation capacity	50kvar～300kvar	100kvar～600kvar	90kvar～540kvar	100kvar～720kvar	150kvar～900kvar
电网结构 Grid configuration	三相三线，三相四线 Three-phase three-wire Three-phase four-wire				三相三线 Three-phase three-wire
并联台数 Number of parallel units	不限 No restrictions				
整机效率 Overall efficiency	≥97%				
开关频率 Switching frequency	16kHz		12.8kHz		
功能选择 ① Function selection	A、B、A+B、B+A、B+C、A+C、B+C+A、A+C+B				A、B、A+B
无功补偿率 Reactive compensation rate	无功补偿≥95% Reactive power compensation ≥95%				无 NO
不平衡补偿能力 Unbalance compensation capability	补偿后不平衡度≤5% Unbalance degree after compensation ≤5%				
电流谐波补偿能力 Harmonic comp. (current)	电流谐波补偿≥95% Harmonic comp. (current) ≥95%				
中性线滤波能力 Neutral line filtering capability	中性线滤波能力为相滤波能力的 2 倍（3 倍可定制） Neutral line filtering capacity is twice that of phase filtering capacity (triple customizable).				
全响应时间 Full response time	无功＜10ms，谐波<40ms Reactive power: <10ms, Harmonics: <40ms				
噪音 Noise level	≤75dB				
通讯方式 Communication method	2 路 RS485 通信接口（支持 Wi-Fi） 2 RS485 communication interfaces (Wi-Fi supported)				
保护功能 Protection functions	过载、软/硬件过流、电网过欠压、电网电压不平衡、电源故障、过温、频率异常、短路保护等 Overload, software/hardware overcurrent, grid overvoltage/undervoltage, grid voltage unbalance, power supply failure, overtemperature, frequency anomaly, short circuit protection, etc.				
过载能力 Overload capability	额定1.2倍过载60秒 Rated overload 1.2 times for 60 seconds				
安装方式 Installation method	机架/壁挂 Rack-mount / Wall-mount				
进线方式 Cable entry	后进线(机架式)、上进线(壁挂式) Rack-mount / Wall-mount				
防护等级 Protection rating	IP20(IP54可定制) IP20 (IP54 available on request / customizable)				
尺寸 Size	1250*1000*2200				

① A:无功补偿 Reactive compensation　B:谐波补偿 Harmonic compensation
C:三相不平衡补偿 Three-phase unbalance compensation

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统一电能质量调节装置

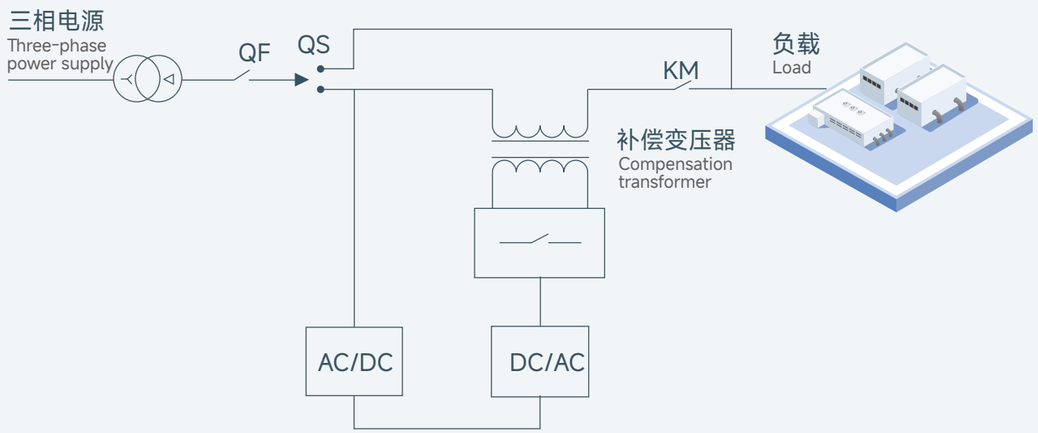
Unified power quality control device

GY-AVC

统一电能质量调节装置是由AC-DC-AC变换器、断路器QF、接触器KM以及补偿变压器组成。AC-DC-AC变换器采用全控型电力电子器件，可以实现能量双向流动;旁路开关是在检修时切到旁路状态;接触器KM是在补偿状态下，断开或者接通负载用。自动电压调节装置通过采样电网电压，实时监测电网电压是否偏离设定值，一旦偏离设定值，即控制AC-DC-AC变换器输出与电网电压极性相同或相反的电压，调节串联在主回路中补偿变压器的电压幅值和极性，保证负载端电压的稳定。

Unified power quality control device (AVC) device consists of an AC-DC-AC converter, a circuit breaker QF, a contactor KM, and a compensation transformer. The AC-DC-AC converter employs fully-controlled power electronic devices, enabling bidirectional power flow. The bypass switch is used to switch to the bypass state during maintenance. The contactor KM is used to disconnect or connect the load under the compensation state. The AVC device samples the grid voltage and monitors in real time whether the grid voltage deviates from the set value. Once a deviation is detected, it controls the AC-DC-AC converter to output a voltage with the same or opposite polarity as the grid voltage, thereby adjusting the magnitude and polarity of the voltage across the compensation transformer which is connected in series in the main circuit, so as to ensure the stability of the load-side voltage.

工作原理 Working Principle



产品型号及外观 Product model and appearance

GY - AVC - 0.4 - 30k / 4L - C

- 安装方式　C:整柜式
- 接线方式　4L:三相四线
- 额定功率(kVA)　30kVA, 45kVA, 60kVA, 90kVA, 120kVA,150kVA, 200kVA, 300kVA, 400kVA
- 电压等级　0.22: 220V　0.4: 380V
- 自动电压调节装置
- 浙江格亚电气有限公司

性能特点 Performance characteristics

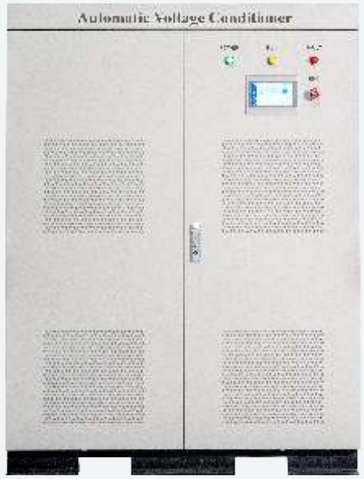
(1)实时控制AC-DC-AC变换器输出电压，保证负载端电压稳定。
(2)电压无级调节，调节精度高，调节过程不间断。
(3)补偿电压幅值和速度可以控制，且分相控制输出电压，适应严重不平衡负载。
(4)变换器采用模块化设计，维护方便、扩展性好。(5)具备过载保护、软/硬件过流保护、电网过/欠压保护、过温保护、频率异常保护等，提高供电的可靠性。
(6)具有故障报警及记忆功能，可存储30个故障天的故障记录，在存储范围内，不限条数。

(1) Real time control of AC-DC-AC converter output voltage to ensure stable load terminal voltage.
(2) Voltage stepless regulation, high regulation accuracy, and uninterrupted regulation process.
(3) The amplitude and speed of the compensation voltage can be controlled, and the output voltage can be controlled by phase separation to adapt to severely unbalanced loads.
(4) The converter adopts modular design, which is easy to maintain and has good scalability.
(5) Equipped with overload protection, software/hardware overcurrent protection, power grid overvoltage/undervoltage protection, over temperature protection, frequency anomaly protection, etc., to improve the reliability of power supply.
(6) It has fault alarm and memory functions, and can store fault records for 30 fault days. There is no limit to the number of records within the storage range.

技术参数 Technical parameters

输入电压 Input voltage	220V(单相Single Phase)	380V+N(三相Three-Phase)
输入范围 Input Range	±20%(额定电压) ± 20% (rated voltage)	
输入频率 Input frequency	50Hz/60Hz±1.5Hz 50Hz/60Hz±1.5Hz	
电流谐波畸变率 current hamonic distortion rate	增量≤3% Increment ≤ 3%	
电压谐波畸变率 Voltage harmonic distortion rate	增量≤3% Increment ≤ 3%	
输出电压 Output voltage	220V±1% 220V±1%	
输出电压设置范围 Output voltage setting range	输入电压的±20% ± 20% of input voltage	
调压方式 Voltage regulation method	无级、无触点 Stepless and contactless	
调节方式 Adjustment method	单相调节 Single-phase regulation	
谐波畸变 Harmonic distortion	≤3% ≤ 3%	
效率 Efficiency	≥95% ≥95%	
功率因数 Power factor	0.5滞后到0.7超前 0.5 lag to 0.7 lead	
7寸触摸屏 7-inch touch screen	提供参数设置，功率信息显示，故障记录，历史曲线等 Provide parameter settings, power information display, fault records, historical curves, etc	
保护功能 Protection function	输入过压/欠压保护、输出过压/欠压保护、输入过流保护、变压器过温保护、输出过载保护等 Input overvoltage/undervoltage protection, output overvoltage/undervoltage protection, input over current protection, transformer over temperature protection, output overload protection, etc	
相对湿度 Relative humidity	≤90%，月最低温度25°C表面无凝露 ≤ 90%, monthly minimum temperature 25 ° C, no condensation on the surface	
海波高度 Sea wave height	2000m以下 Below 2000m	
污秽等级 Pollution level	III级以下 Below Level III	
噪音 Noise	≤65dB ≤65dB	
工作温度 Operating Temperature	-10°C~+50°C -10°C~+50°C	
储存温度 Storage temperature	-30°C~+70°C -30°C~+70°C	
散热方式 Cooling method	强制风冷 forced air cooling	
防护等级 Protection level	Ip20 Ip20	

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统一电能质量调节装置

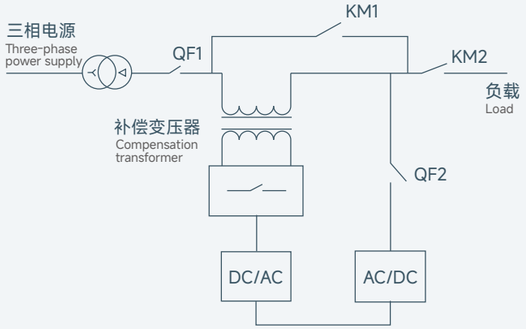
Unified power quality control device

GY-AVC-PLUS

统一电能质量调节装置（GY-AVC-PLUS）主要由整流器、逆变器、补偿变压器、监控系统以及交直流配电组成。具备电压暂降（-40%）治理、电压暂升（+30%）治理、无功补偿、谐波补偿以及三相不平衡补偿等功能的综合电能质量治理装置，在改善电网电能质量的同时，保证负载稳定供电，为生产用户避免因电压波动造成的经济损失。

The unified power quality control device (GY-AVC-PLUS) mainly consists of a rectifier, inverter, compensating transformer, monitoring system, and AC/DC distribution. A comprehensive power quality control device with functions such as voltage sag (-40%) control, voltage sag (+30%) control, reactive power compensation, harmonic compensation, and three-phase imbalance compensation. It improves the power quality of the power grid while ensuring stable power supply to the load, avoiding economic losses caused by voltage fluctuations for production users.

工作原理 Working Principle



外观与型号规格 Appearance and Model Specifications:

常用型号 Common models	补偿容量(kVA) Compensation capacity (kVA)	系统电压(V) System voltage (V)	冷却方式 Cooling method
GY-AVC-PLUS-0.22-30k	30	220	强制风冷 forced air cooling
GY-AVC-PLUS-0.4-30k	30	380	
GY-AVC-PLUS-0.4-60k	60	380	
GY-AVC-PLUS-0.4-80k	80	380	
GY-AVC-PLUS-0.4-100k	100	380	
GY-AVC-PLUS-0.4-150k	150	380	
GY-AVC-PLUS-0.4-300k	300	380	
GY-AVC-PLUS-0.4-400k	400	380	
GY-AVC-PLUS-0.4-500k	500	380	

性能特点 Performance characteristics:

1）采用新型电力电子技术，电压无极调节，调节精度高，调节电压范围宽，调节过程不闪断。
2）采用模块化设计，占地空间小、维护方便。
3）可按用户要求调节补偿电压，调压速度可以设置，且采用分相控制独立调节输出电压，适应严重不平衡负载。
4）可支持无功补偿、谐波补偿、三相不平衡补偿以及电压精确调节等多种功能可选。
5）设备故障时无缝切换到电网供电，保证负载供电不闪断。
6）具备过载保护、软/硬件过流保护、电网过/欠压保护、过温保护、缺相保护、频率异常保护、短路保护等，提高供电的可靠性。
7）可配备 RS485（支持 4G/Wi-Fi）等多种通信接口，以方便用户将设备运行数据接入到监控系统。

1) Adopting new power electronics technology, voltage stepless regulation, high regulation accuracy, wide voltage regulation range, and no flicker during the regulation process.
2) Adopting modular design, it occupies a small space and is easy to maintain.
3) The compensation voltage can be adjusted according to user requirements, and the voltage adjustment speed can be set. The output voltage can be independently adjusted using phase separation control to adapt to severely unbalanced loads.
4) It can support various functions such as reactive power compensation, harmonic compensation, three-phase imbalance compensation, and precise voltage adjustment.
5) When the equipment fails, seamlessly switch to the power grid to ensure that the load power supply does not flash off.
6) Equipped with overload protection, software/hardware overcurrent protection, power grid overvoltage/undervoltage protection, over temperature protection, phase loss protection, frequency anomaly protection, short circuit protection, etc., to improve the reliability of power supply.
7) It can be equipped with various communication interfaces such as RS485 (supporting 4G/Wi Fi) to facilitate users in accessing device operation data to the monitoring system.

技术参数 Technical parameters:

交流参数 Communication parameters		
额定功率 Rated Power	30kVA	30kVA~500kVA
额定电流 Rated Current	135A	45A~750A
额定电压 Rated Voltage	AC220V	AC380V
电压范围 Voltage Range	-40%~+30%	-40%~+30%
额定频率 Rated Frequency	50Hz/60Hz	50Hz/60Hz
电网结构 Grid Structure	L/N+PE	三相四线+PE Three-phase four-wire
交流过载能力 AC Overload Capability	1.1倍长时间 1.1 times the duration	1.1倍长时间 1.1 times the duration
输出电压精度 Output Voltage Accuracy	±1%	±1%
功能选择 Function Selection	电压补偿+(无功补偿、谐波补偿无功补偿+谐波补偿) Voltage compensation+(reactive power compensation, harmonic compensation, reactive power compensation+harmonic ompensation)	电压补偿+（无功补偿、谐波补偿、三相不平衡补偿、无功补偿+谐波补偿、无功补偿+三相不平衡补偿、无功补偿+三相不平衡+谐波补偿） Voltage compensation+(reactive power compensation, harmonic compensation, three-phase unbalance compensation, reactive power compensation+harmonic compensation)Reactive power compensation+three-phase unbalance compensation, reactive power compensation+three-phase unbalance+harmonic compensation)
补偿电压范围 Compensation Voltage Range	AC380±20%(-40%~+30%可定制) AC380 ± 20% (-40%~+30% customizable)	
变压器变比 Transformer Ratio	5:1 5:1	
谐波补偿率 Harmonic Compensation Rate	3-13次综合谐波补偿≥95% 3-13 times comprehensive harmonic compensation ≥ 95%	
无功补偿率 Reactive Power Compensation Rate	无功补偿≥99% Reactive power compensation ≥ 99%	
三相不平衡补偿率 Three-Phase Unbalance Compensation Rate	/	补偿后不平衡度≤5% Unbalance degree after compensation ≤ 5%
允许电网频率 Allowable Grid Frequency	45~63Hz	
输出电压谐波畸变率增量 Output Voltage THD Increment	≤1%	
补偿响应时间 Compensation Response Time	< 20ms	
变压器参数 Transformer parameters		
额定容量 Rated Capacity	6kVA	6kVA~100kVA
类型 Type	干式，磁芯由叠层硅钢片制作而成，架壳接地 Dry type, the magnetic core is made of stacked silicon steel sheets, and the frame is grounded	
过载 Overload Capability	1.1倍长时间运行 1.1 times longer running time	
绝缘 Insulation	绝缘等级H级 Insulation level H	
变比 Transformation Ratio	220: 44 220: 44	
设计温度 Design Temperature	温升≤90K Temperature rise ≤ 90K	
执行标准 Applicable Standard	IEC 726 IEC 726	
系统参数 System parameters		
海拔高度 Altitude	<2000m，2000米以上按照GB/T3859.2降额使用 <2000m， Use in accordance with GB/T3859.2 for downgrading above 2000 meters	
环境温度 Ambient Temperature	-10~+50°C(40°C以上降容) -10~+50 ° C (reduced capacity above 40 ° C)	
相对湿度 Relative Humidity	90%，月最低温度25°C表面无凝露 90%, monthly minimum temperature 25 ° C, no condensation on the surface	
污秽等级 Pollution Degree	I级以下 Below Level I	
噪音 Noise Level	≤70dB ≤70dB	
防护等级 Degree of Protection	IP20(IP54可定制) IP20 (IP54 customizable)	

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智能制造业

Intelligent manufacturing industry

提升功率因数、抑制谐波、稳压
Improve power factor, suppress harmonics, stabilize voltage

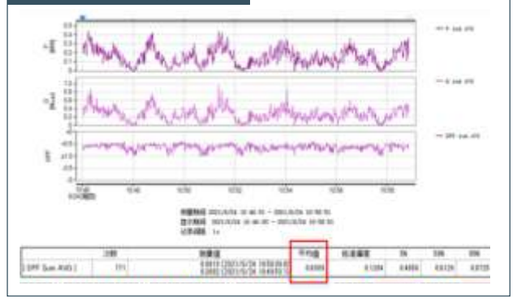


案例背景：湖北某商用车制造公司车身装焊车间，冲击性负荷导致功率因数较低。
治理方案：投入总容量800kvar的静止无功发生装置（SVG），将功率因数由0.63提升至0.917，避免力调电费罚款。

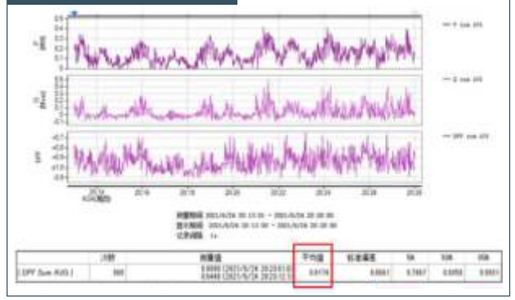
Case Background: In the body welding workshop of a commercial vehicle manufacturing company in Hubei, impact loads resulted in a low power factor.
Solution: An 800kvar Static Var Generator (SVG) was installed, increasing the power factor from 0.63 to 0.917, thereby avoiding penalty charges for low power factor.

项　目 Project	补偿前 Before compensation	补偿后 After compensation
平均功率因数 Average power factor	0.63 增收力调电费 Power factor penalty charge	0.917 免收力调电费 Exemption from power factor penalty charge

补偿前 Before compensation



补偿后 After compensation



半导体行业

Semiconductor industry

抑制谐波、提升供电质量
harmonic suppression and power quality improvement

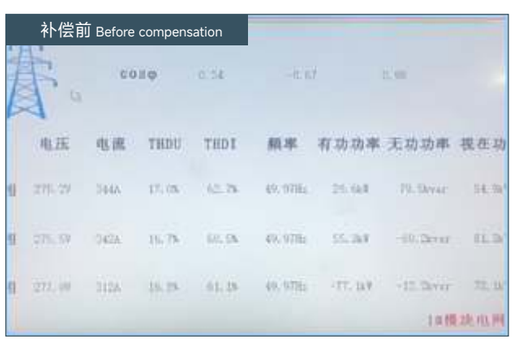


案例背景：某半导体生产车间机台负载产生的电流谐波，导致UPS供电电源输出电压谐波畸变率严重增加，影响机台负载正常运行，甚至造成机台负载宕机。
治理方案：利用高性能APF，将THDu由17%降至3%，避免机台负载宕机。

Case Background: In a semiconductor manufacturing workshop, current harmonics generated by the equipment loads caused a severe increase in the output voltage harmonic distortion (THDu) of the UPS power supply, affecting the normal operation of the equipment and even leading to equipment shutdown.
Solution: A high-performance Active Power Filter (APF) was deployed, reducing THDu from 17% to 3%, thereby preventing equipment shutdown.

相 位 Phase	补偿前 Before compensation	补偿后 After compensation	改善幅度 Improvement margin
A 相	17.0	2.8	83.5%
B 相	16.7	3.3	80.2%
C 相	16.8	3.0	82.1%

补偿前 Before compensation



补偿后 After compensation



数据中心

Data center

提升功率因数和供电质量、抑制谐波
Improve power factor and power quality, suppress harmonics



案例背景：某数据机房末端精密空调变频压缩机产生的谐波，给配电系统造成非必要损耗、影响电气设备正常运行、降低配电系统使用效率以及增加用电成本。
治理方案：利用高性能APF，将THDi由60%降至5%，用电效率显著提升。

Case Background: Harmonics generated by the variable-frequency compressor of precision air conditioners at the load end of a data center computer room caused unnecessary losses to the power distribution system, affected the normal operation of electrical equipment, reduced the efficiency of the power distribution system, and increased electricity costs.
Solution: A high-performance Active Power Filter (APF) was deployed, reducing THDi from 60% to 5%, significantly improving power efficiency.

项目 Project	补偿前 Before compensation	补偿后 After compensation
平均功率因数 Average power factor	0.84	0.96
电流谐波畸变率 Current harmonic distortion rate	60%	5%



新能源并网

New energy grid connection

避免力调电费罚款、抑制谐波
Avoid power factor penalty charges and suppress harmonics



案例背景：浙江湖州某309.69kWp光伏并网发电项目，计量点在400V低压侧与光伏接入点间，功率因数不达标，面临大额力调电费罚款。
治理方案：在计量点上端安装150ATPQC，通过高采低补方式，改善功率因数。

Case Background: A 309.69 kWp photovoltaic grid-connected power generation project in Huzhou, Zhejiang. The metering point is located between the 400V low-voltage side and the PV grid-connection point. The power factor was below the required standard, facing substantial penalty charges for low power factor.
Solution: A 150 A TPQC (Three-phase Power Quality Conditioner) was installed upstream of the metering point, using a high-side sampling / low-side compensation method to improve the power factor.

相 位 Phase	治理前 Before compensation	治理后 After compensation	改善幅度 Improvement margin
平均功率因数 Average power factor	0.67	0.95	41.8%
电路电流降低:1 - 0.67 / 0.95 = 29.47% Circuit current reduction			
电路损耗降低:1 -(0.67 / 0.95)² = 29.47% Circuit loss reduction			

行业痛点：新能源发电出力受自然条件影响呈间歇性、波动性，易引发电网电压与频率波动，且并网逆变器会产生谐波，污染电网电能质量；这类问题既冲击电网调度与稳定运行，还会损害变电设备寿命，降低新能源消纳能力。

Industry Pain Points: The output of renewable energy generation is intermittent and fluctuating due to natural conditions, which can easily cause grid voltage and frequency fluctuations. Additionally, grid-connected inverters generate harmonics, polluting the power quality of the grid. These issues not only impact grid dispatch and stable operation, but also shorten the lifespan of substation equipment and reduce the grid's capacity to absorb renewable energy.

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农网台区1

Rural Grid Distribution Area 1

高低电压治理、节能降耗
High/low voltage regulation, energy saving and consumption reduction



案例背景：浙江温州某台区，大规模光伏接入台区，高电压、三相电压不平衡问题接连产生，导致光伏脱网，甚至严重影响用户及企业用电情况。

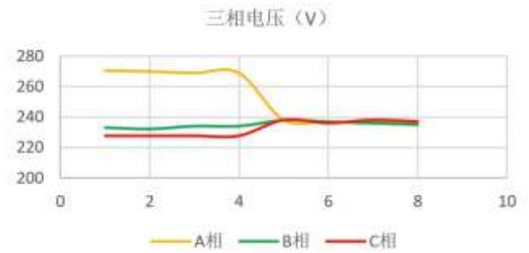
治理方案：利用TPQR治理高电压/三相电压不平衡，将电压调整至230V，满足考核要求。

Case Background:In a distribution area in Wenzhou, Zhejiang, large-scale photovoltaic integration led to successive issues of high voltage and three-phase voltage unbalance, causing PV disconnection and even seriously affecting power consumption for both residential and industrial users.
Solution: A TPQR was used to regulate the high voltage and three-phase voltage unbalance, adjusting the voltage to 230V and meeting the required compliance standards.

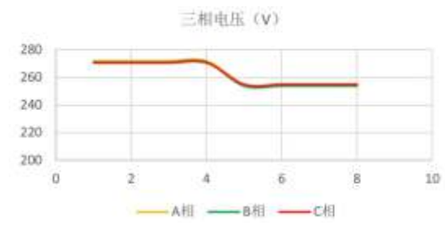
行业痛点：因单相负荷分布不均、线路径细且供电半径长、季节性负荷波动，普遍存在三相严重不平衡、电压偏低或偏高的问题；叠加非线性设备普及带来的谐波污染，加剧线路损耗与设备故障，影响乡村生产生活用电安全。

Industry Pain Points: Due to uneven distribution of single-phase loads, thin line diameters with long power supply radii, and seasonal load fluctuations, issues such as severe three-phase unbalance and voltage deviation (either too low or too high) are common. Coupled with harmonic pollution caused by the widespread use of nonlinear equipment, these problems aggravate line losses and equipment failures, affecting the safety of electricity consumption for rural production and daily life.

补偿前 Before compensation



补偿后 After compensation



农网台区2

Rural Grid Distribution Area 2

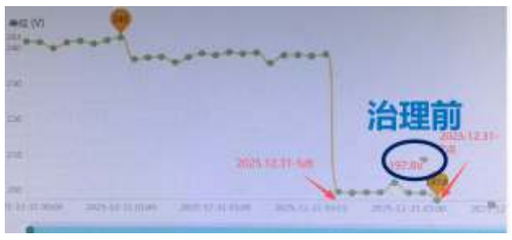
末端稳压
End-point voltage regulation

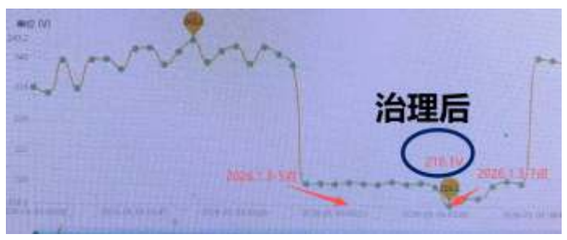


案例背景：安徽某台区，供电台区至线路末端线路长度约1km，供电线路过长，线路末端有4台单相7kw的充电桩，当充电桩运行时，导致末端低电压，有时电压会低至190V左右，严重影响末端用户的用电质量。

治理方案：利用TPQR治理高电压/三相电压不平衡，将电压调整至230V，满足考核要求。

Case Background:In a distribution area in Wenzhou, Zhejiang, large-scale photovoltaic integration led to successive issues of high voltage and three-phase voltage unbalance, causing PV disconnection and even seriously affecting power consumption for both residential and industrial users.
Solution: A TPQR was used to regulate the high voltage and three-phase voltage unbalance, adjusting the voltage to 230V and meeting the required compliance standards.





石油开采

Oil extraction

提升功率因数和供电质量、抑制谐波
Improve power factor and power quality, suppress harmonics



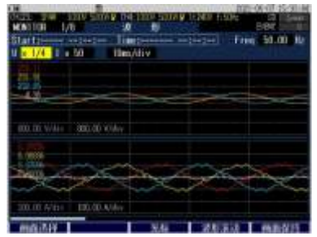
案例背景：石化某石油开采项目，设备作业期间产生大量谐波电流，给系统带来严重的谐波污染，导致抽油机误动作甚至停机。

治理方案：在低压配电室安装690V APF进行谐波治理，装完毕后此系统的电流畸变率降低至GB/T 14549标准要求，治理效果显著。抽油机运行状态良好，无误动作及停机事件发生。

Case Background:In a petrochemical oil extraction project, large amounts of harmonic current were generated during equipment operation, causing serious harmonic pollution to the power system, which led to malfunction or even shutdown of the pumping units.
Solution: A 690V Active Power Filter (APF) was installed in the low-voltage distribution room for harmonic mitigation. After installation, the current distortion rate of the system was reduced to meet the requirements of the GB/T 14549 standard, achieving significant improvement. The pumping units have been operating in good condition, with no malfunctions or shutdowns.









电流畸变率对比 Current distortion rate comparison	
治理前 Before treatment	33.69%
整理后 After treatment	11.92%

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