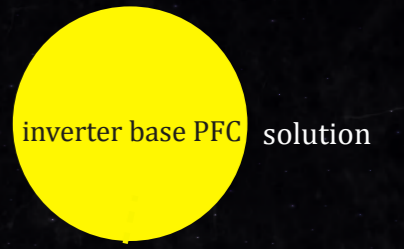
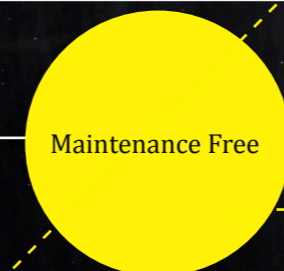
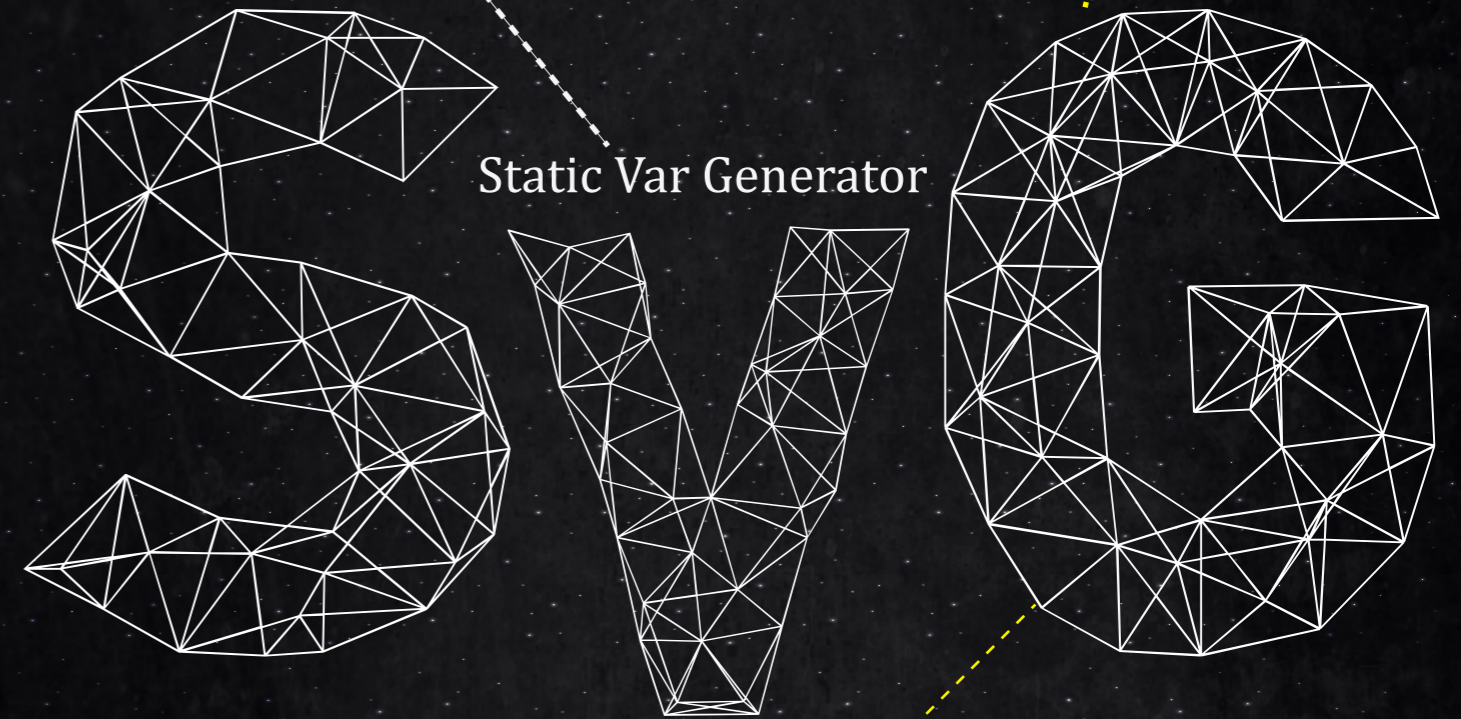
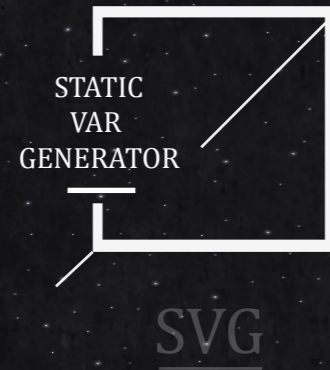


Sinexcel



inverter base PFC solution

Power quality

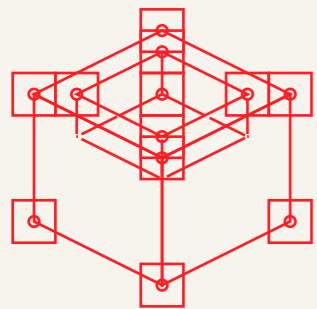


Maintenance Free

PF 0.99

Stepless PFC

STATIC VAR GENERATOR

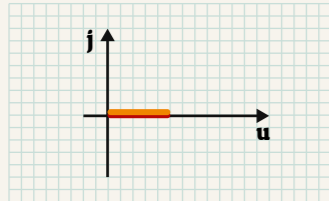


Static Var Generator
SVG, reactive power compensation
SVG, with the idea of using as a component, could compensate both inductive and capacitive loads to achieve PF 0.99 and avoid under and over compensation.

REACTIVE POWER COMPENSATION

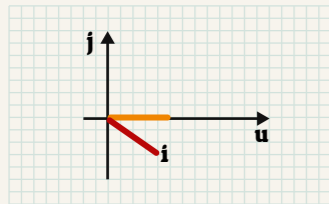
Different compensation model for different loads

★ Current
Voltage
Compensation Current



RESISTIVE LOAD

RESISTIVE LOAD such as filament lamp in vector gram, load appears resistive when current and voltage are phase congruency.

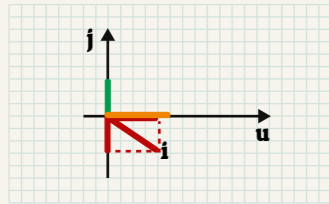


INDUCTIVE LOAD

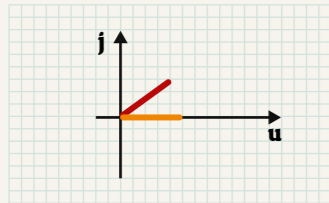
INDUCTIVE LOAD such as motor, compressor, relay and transformer.

1. Current of inductors lags voltage

In vector gram, anticlockwise direction is set to be positive direction and U direction as the horizontal direction. Load appears inductive and resistive when I is within 0 to -90 degree.



SVG generates capacitive current to neutralize inductive content of the load, achieving the performance for current and voltage phase congruency.

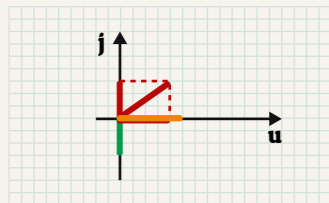


CAPACITIVE LOAD

CAPACITIVE LOAD such as capacitor bank

2. Current of capacitors leads voltage

In vector gram, anticlockwise direction is set to be positive and U direction as the horizontal direction. Load appears capacitive and resistive when I is within 0 to 90 degree.



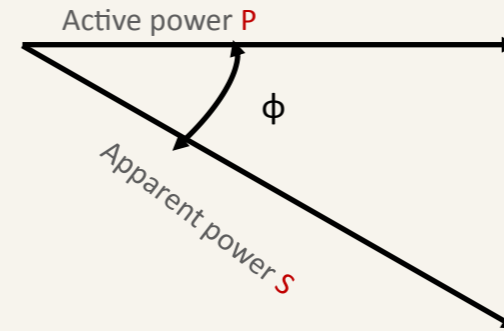
SVG generates inductive current to neutralize capacitive content of the load, achieving the performance for current and voltage phase congruency.

POWER FACTOR

Optimize your reactive power compensation efficiency



ACTIVE POWER, REACTIVE POWER, APPARENT POWER AND POWER FACTOR



Reactive power Q

$$P^2 + Q^2 = S^2$$

Power factor $\cos \phi$

$$\cos \phi = \frac{P}{S}$$

BENEFIT FROM PFC



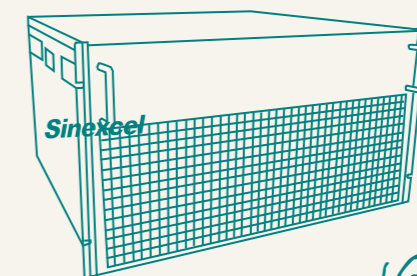
★ Avoid penalty for low PF by Utility Company



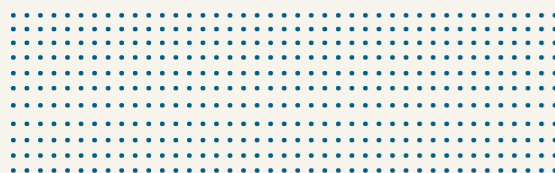
★ Reduce electric energy loss



★ Release system capacity occupied by reactive power, increase usage effectiveness of system capacity.



SVG Inverter Base

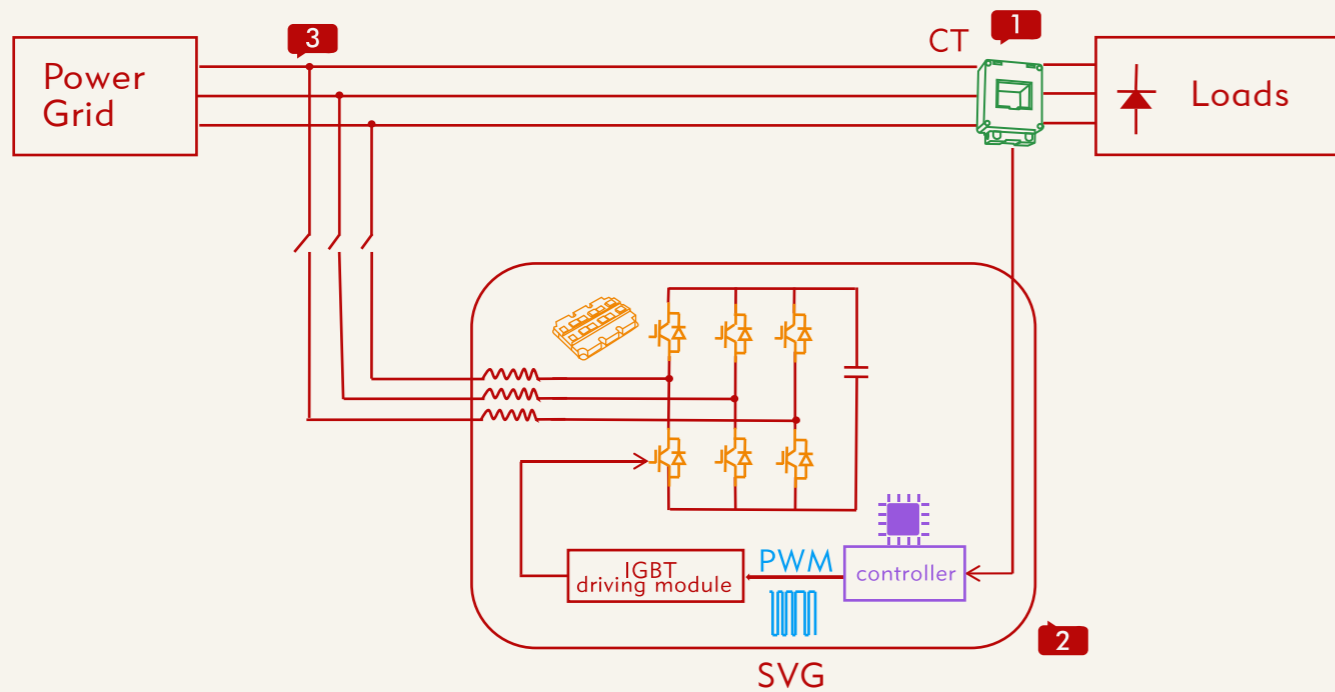


SVG WORKING PRINCIPLE

Optimize your reactive power compensation efficiency



External CT detects the load current. DSP as CPU has advanced logic control arithmetic, could fast track the instruction current, divides the load current into active power and reactive power by using the Instantaneous Reactive Power Algorithm, and calculates the reactive power change rate rapidly and accurately, then sends PWM signal to IGBT's driver board to control IGBT on and off at average 20kHz frequency. Finally inductive or capacitive power compensation current is generated on inverter induction, at the same time CT also detects the output current and forms a negative feedback to DSP. Then DSP proceeds the next logical control to achieve more accurate and stable system.

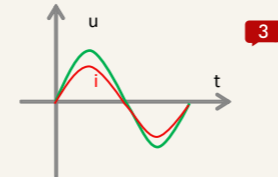
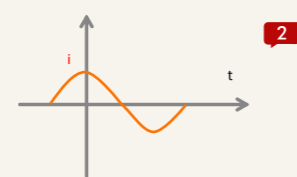
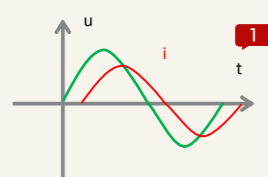


LOAD

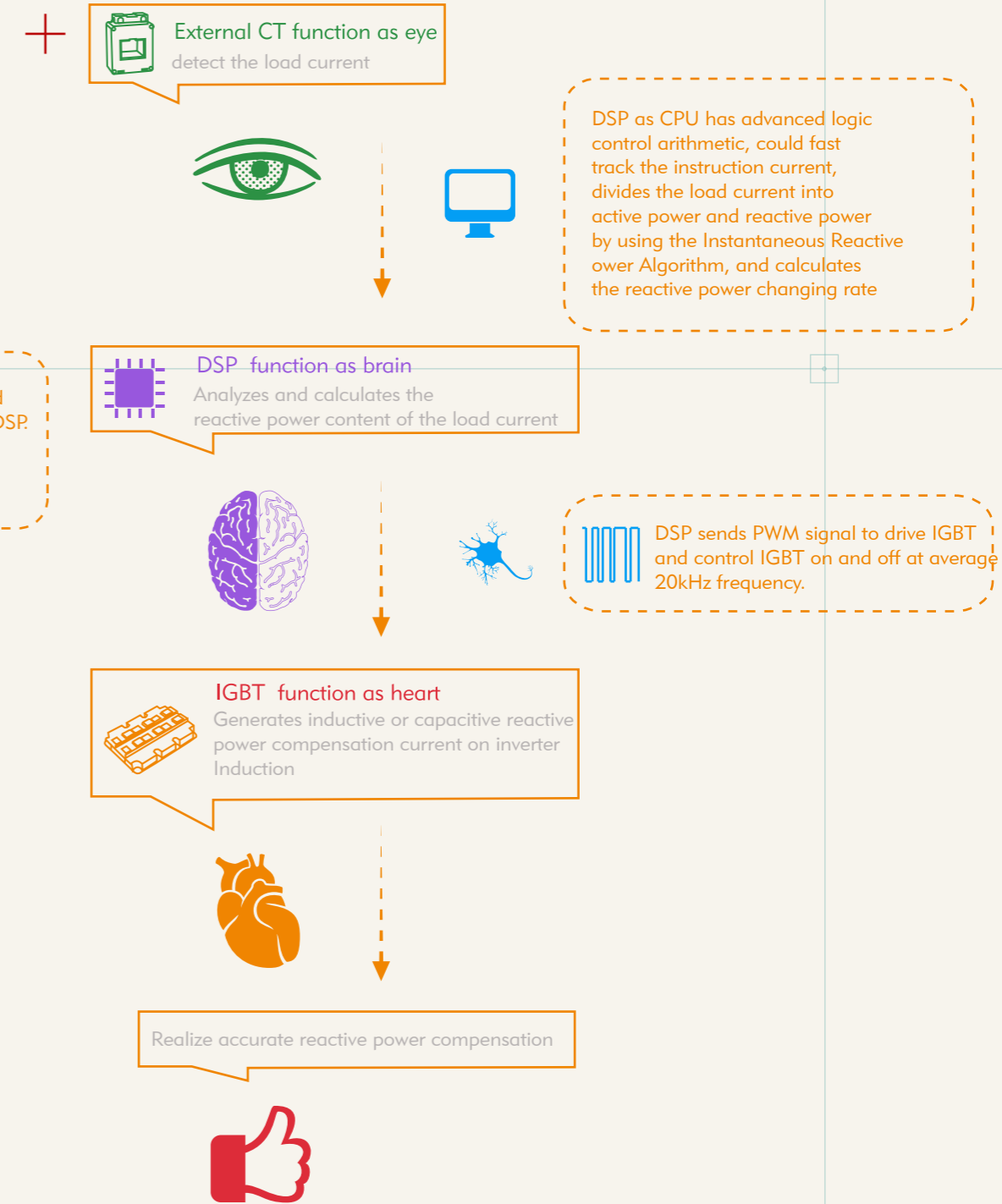
SVG

SOURCE

WAVEFORM

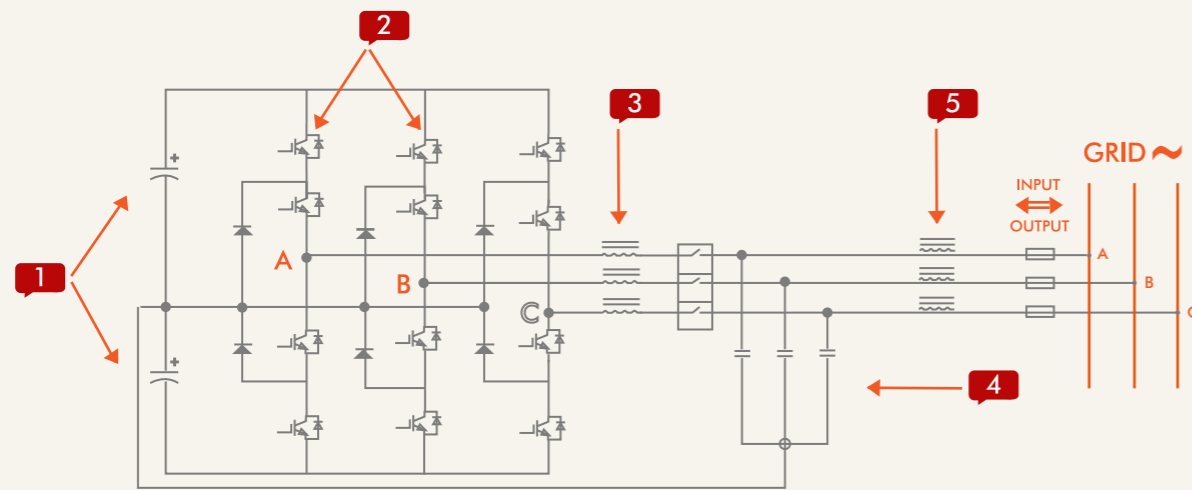


— Voltage
— Current
— Output Capacitive Reactive Power



UNDERSTAND HOW SVG COMPENSATE REACTIVE POWER

Optimize your reactive power compensation efficiency

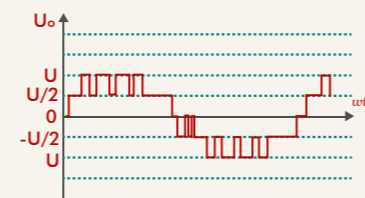


DC BUS CAPACITOR

DC bus capacitor, AC to DC rectifier storage

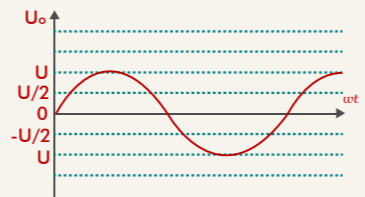
IGBT

Controlled by DSP software algorithm, IGBT on-off timing selection and length could control inverter to generate an accurate reactive power compensation current.



INVERTER INDUCTION

IGBT Compensating inductive reactive power or capacitive reactive power by controlling inverter induction to generate a capacitive current or inductive current to achieve bidirectional reactive power compensation.



LC FILTER CIRCUIT

HIGH FREQUENCY INDUCTOR

Both are for filtering. The combination of LC filter circuit and high frequency inductor are called LCL filter circuit



KEY FEATURES AND BENEFITS

Impressive compensation effect of SVG

PFC PERFORMANCE

PFC performance 0.99

Step-less compensation without over-compensation and under-compensation, compensate specific capacity that system needs.

Full PFC process within 15ms and maintain at PF0.99 no matter how the system reactive power changes.

Compensation with inductive reactive power and capacitive reactive power.

The voltage of the grid has little influence on SVG compensation capacity as SVG is like a current source.

MAINTENANCE FREE, SAFE AND EASY TO USE

Could work under high THDu up to 15%, no capacitor explosion risk and no safety accident.

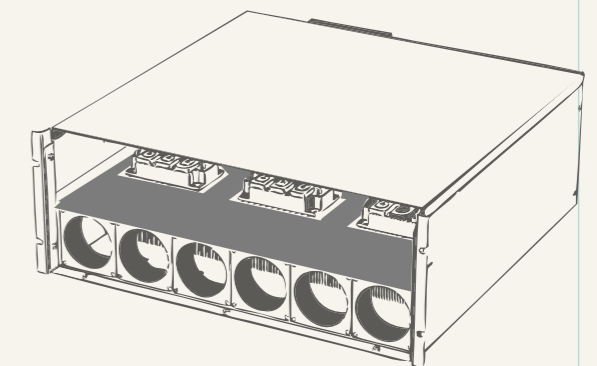
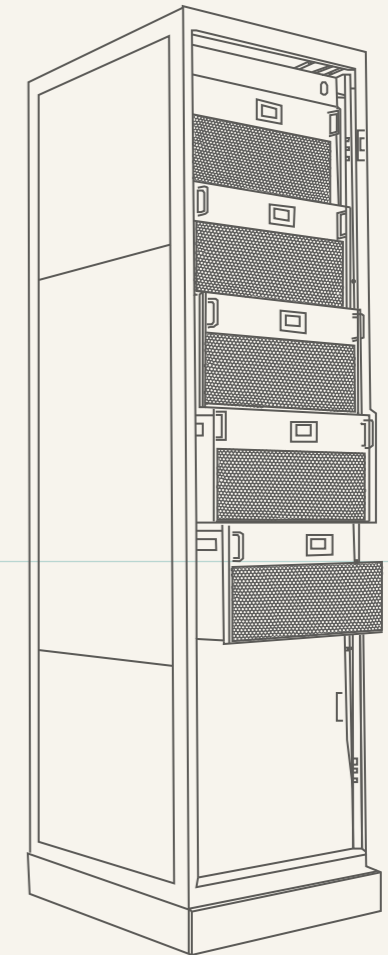
Minimal loss, maintenance-free and no need to replace cap bank every certain time.

MTBF (mean time between failures) up to 100,000 hours, helps consumers lower the cost.

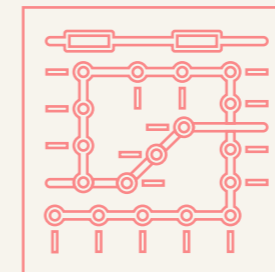
Advanced technology and easy to use with HMI monitor

SPACE AND CAPACITY

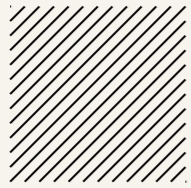
Minimal footprint to save more than 70% space compared with cap bank.



SVG Inverter Base



ENTER THE



400V Grid Voltage

Specification

Item
Rated input line voltage
Input phase voltage range
Power grid frequency
Parallel operation
Overall efficiency
Power grid structure
CT
Circuit topology
Single-module compensation capacity
Response time
Target power factor
Cooling mode
Noise level per module
Communications ports
Communications protocols
Alarm
Monitoring
Mounting type
Cable entry mode
Dimensions (W x D x H) (mm ³)
Module net weight
Color
Altitude
Ambient temperature
Relative humidity
Protection grade
Qualifications
Standards compliance

400V			480~690V (large capacity)		
Sinexcel SVG 030	Sinexcel SVG 050	Sinexcel SVG 100	75	95	110
System parameters					
400V			480V	600V	690V
228V~456V			384V~576V	480V~720V	552V~759V
50Hz/60Hz (range : 45Hz ~ 62.5Hz)			50Hz/60Hz (range : 45Hz ~ 62Hz)		
Unlimited			4		
> 97%			>99% (at 50% inductive load)		
3P3L/3P4L			3P3L		
150/5 ~ 10,000/5			800/5~10000/5		
3-level					
Performance indicators					
30kvar	50kvar	100kvar	480/960/1440/1920kvar	600/1200/1800/2400kvar	690/1380/2070/2760kvar
< 15ms			< 40ms		
Adjustable from -1 to +1					
Smart air cooling: 220 L/sec		Smart air cooling: 405 L/sec		Smart air cooling: 3000m ³ /h(*1-4)	
< 65dB			< 70dB		
Communications and monitoring capabilities					
RS485, CAN (reserved), and Ethernet port (RJ45)			RS485 and Ethernet port (RJ45)		
Modbus					
Available					
No display	2.2-inch or 4.3-inch touch screen monitor and optional 7-inch touch screen centralized monitor		7-inch touch screen centralized monitor		
Mechanical properties					
Rack-mounted, wall-mounted, and cabinet					
Rear entry for rack-mounted type; top entry for wall-mounted type; top or bottom entry for cabinet			bottom entry		
440*445*150 (Rack-mounted)	500*557*190 (Rack-mounted)	500*520*269 (Rack-mounted)	600*800*2200/1200*800*2200/1800*800*2200/2400*800*2200		
440*160*481 (Wall-mounted)	500*191*582 (Wall-mounted)	500*271*553 (Wall-mounted)			
21kg	35kg	48kg			
500kg(One cabinet)					
RAL7035(gray)					
Environment requirement					
1500 m. Between 1500 m and 4000 m, according to GB/T3859.2, the power decreases by 1% for every additional 100 m.					
-10°C~40°C (may derate capacity if ambient temperature exceeds 45°C)					
5%~95%, non-condensing					
IP20 (other IP degrees are customizable)					
Related qualifications and standards					
CE					
IEEE519, ER G5/4					

INVERTER

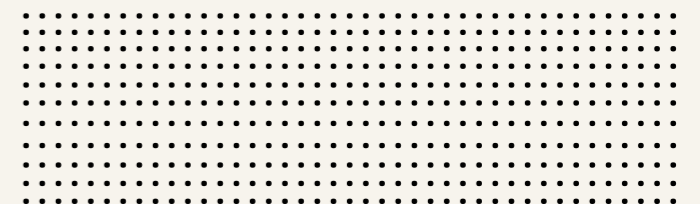


North America
& 690V Grid voltage



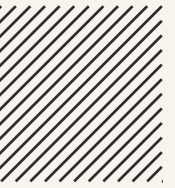
Specification

Item	480~690V (North America)		
	Sinexcel SVG 50/75	Sinexcel SVG 50/95	Sinexcel SVG 40/60/90/ 110
System parameters			
Rated input line voltage	480V(USA)	600V(Canada)	690V
Input phase voltage range	384V~552V	420V~690V	483V~793V
Power grid frequency	50Hz/60Hz (range : 45Hz ~ 62Hz)		
Parallel operation	Unlimited		
Overall efficiency	>97%		
Power grid structure	3P3L/3P4L		
CT	150/5~10,000/5		
Circuit topology	3-level		
Performance indicators			
Single-module compensation capacity	50/ 75kvar	50/95kvar	40/60/90/ 110kvar
Response time	< 15ms		
Target power factor	Adjustable from -1 to +1		
Cooling mode	Smart air cooling 190CFM*4		
Noise level per module	<65dB		
Communications and monitoring capabilities			
Communications ports	RS485, CAN (reserved) , and Ethernet port (RJ45)		
Communications protocols	Modbus		
Alarm	Available		
Monitoring	7-inch touch screen centralized monitor(rack -mount) and 4.3-inch touch screen monitor(wall-mount)		
Mechanical properties			
Mounting type	Rack-mounted, wall-mounted,		
Cable entry mode	Top and bottom entry for cabinet		
Dimensions (W x D x H) (mm ³)	544*640*250(Rack-mounted)		
	504*253*640(Wall-mounted)		
Module net weight	66kg		
Color	RAL7035(gray)		
Environment requirement			
Altitude	1500 m. Between 1500 m and 4000 m, according to GB/T3859.2, the power decreases by 1% for every additional 100 m.		
Ambient temperature	-20°C~40°C (may derate capacity if ambient temperature exceeds 45°C)		
Relative humidity	5%~95%, non-condensing		
Protection grade	IP20 (other IP degrees are customizable)		
Related qualifications and standards			
Qualifications	CE ,cETLus (UL508,CSA C22.2)		
Standards compliance	IEEE519,ER G5/4		





400V



400V



30kvar/50kvar/Wall-mounted
500*190*560(mm)/35kg



100kvar/Wall-mounted
500*270*470(mm)/48kg



30kvar/50kvar/Rack-mounted
500*510*190(mm)/35kg



100kvar/Rack-mounted
500*470*270(mm)/48kg

INVERTER

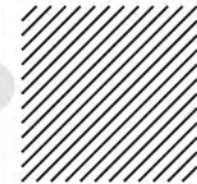


400V



Flexible Engineering Cabinet

- Flexible dimension
600*1000*2200mm³, 800*1000*2200mm³, 800*800*2200mm³ are available.
- Flexible capacity
AHF, 25A/35A/50A/60A/75A/100A/150A adapt to cabinet
SVG, 30kvar/50kvar/100kvar adapt to cabinet
AHF, SVG module adapt to cabinet
- Flexible incoming connection
TOP/ Bottom cable entrance
TOP/ Bottom MCCB position



400V

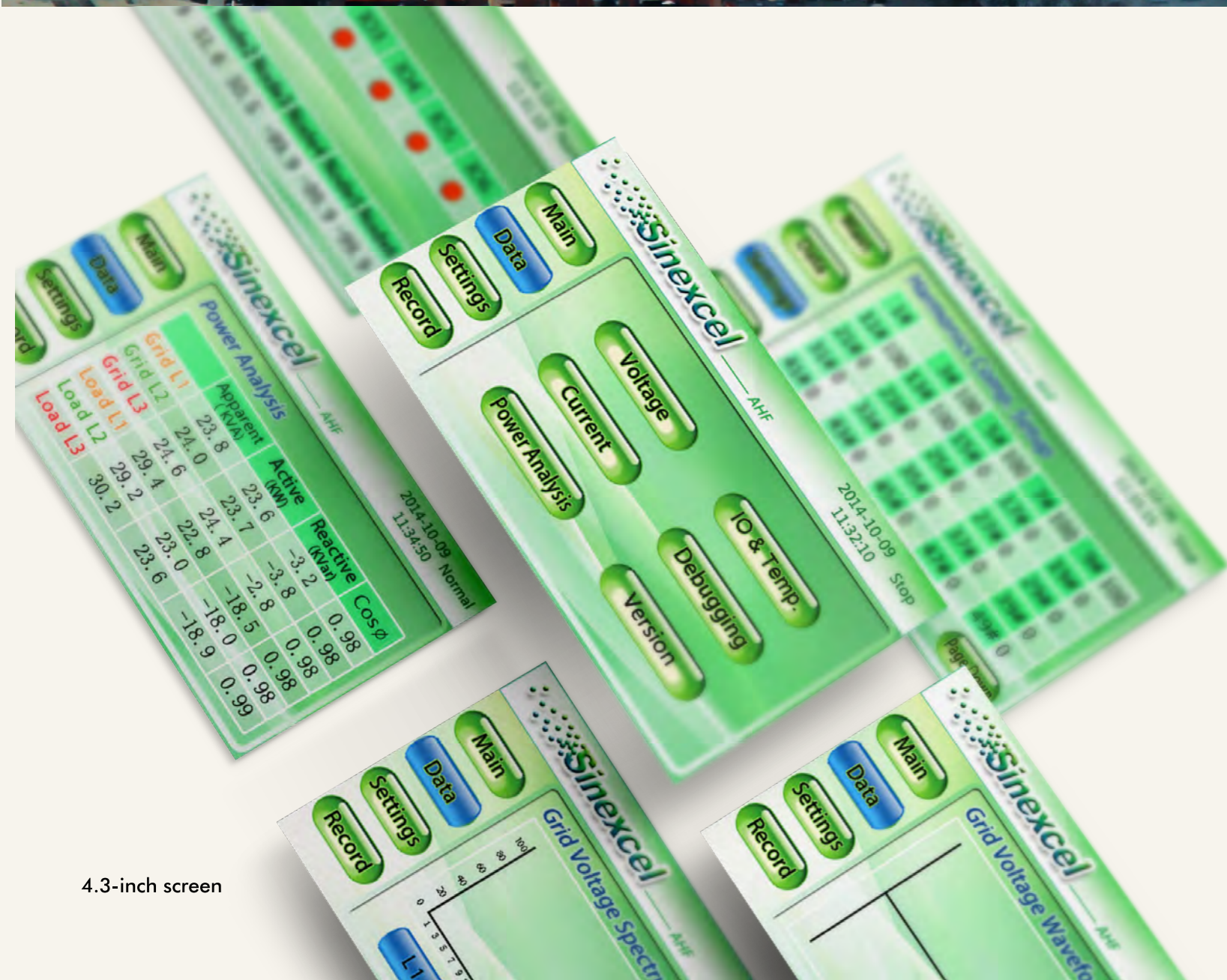


400V SVG PLUG TYPE CABINET

One plug type cabinet could hold five 100kvar modules to achieve 500kvar . The plug type cabinet has built-in module which can be easily removed and added.

The dimension of plug type cabinet: 600*800*2200mm.

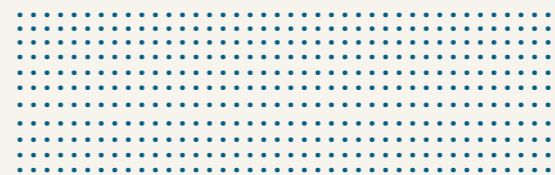
MONITORING



4.3-inch screen



Centralized monitoring System





GLOBAL APPLICATION



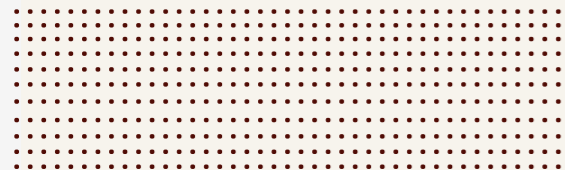


GLOBAL APPLICATION





China, IDC, SVG, ZTE IDC center




Hongkong, Commercial, SVG, Far East Finance Center,






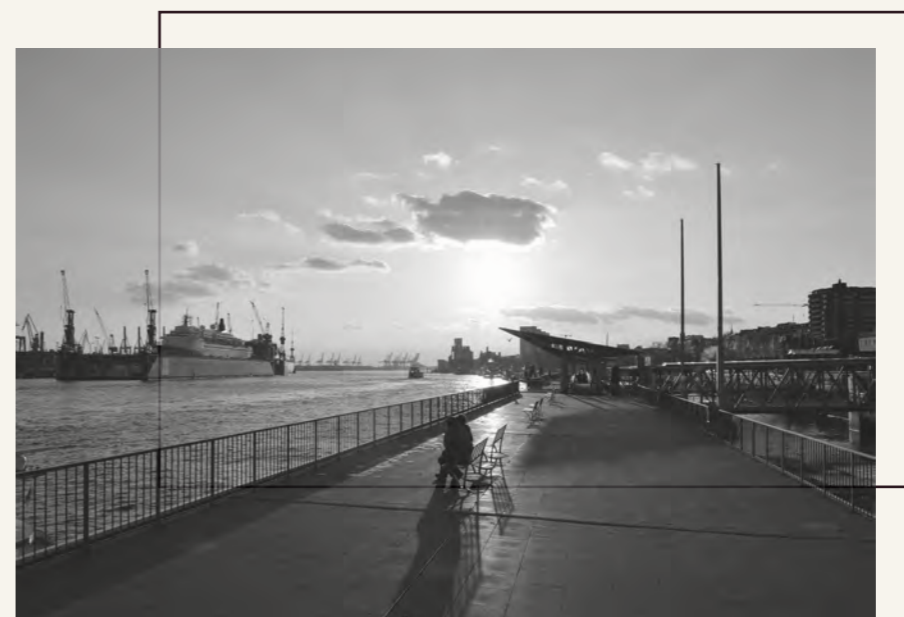




New Zealand, Commercial, SVG, Te Papa Tongarewa Museum, 



 Malaysia, industrial SVG, Johor Port





Sri Lanka, industrial, SVG, Prima Flour Mill Powder



GLOBAL APPLICATION

Sinexcel SVG application covers Asia, Oceania, Europe, Africa,

North America, South America.