

Active harmonic conditioner

SineWave

20/30/45/60/90/120 A

Controlled and selective neutralisation of harmonics

Applications function more efficiently

By neutralising harmonics SineWave eliminates:

- ▶ nuisance tripping of circuit-breakers,
- ▶ premature ageing of equipment.

By correcting the $\cos \phi$, SineWave allows:

- ▶ energy savings,
- ▶ full compatibility by generator sets and capacitive loads.

Complies with current technical standards

SineWave conforms to the set of three technical standards currently in force:

- ▶ harmonic standards: IEC 61000-3-2 and IEC 61000-3-4
- ▶ power quality standards: EN 50160 and IEEE 519
- ▶ standards for compatibility between electrical systems and products: IEC 61000-2-2 and IEC 61000-2-4.

Energy savings

SineWave also corrects the $\cos \phi$ either lagging or leading, up to 1.0. Less current and a $\cos \phi$ close to unity signify a lower factor in terms of apparent and reactive power.

Ultra-simple integration

- ▶ SineWave is extremely compact. It can be mounted on a wall or installed in a switchgear cubicle;
- ▶ SineWave can be connected in parallel, allowing future increases in power demand without disconnecting the supply.
- ▶ SineWave adapts automatically to any single-phase or three-phase load: computer load, speed drives, etc. It is compatible with any type of neutral systems.

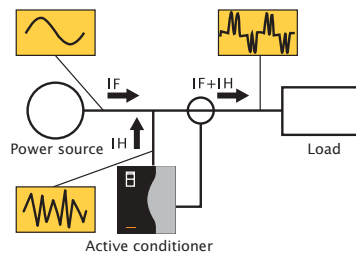


How does an active conditioner work?

The conditioner analyses permanently the current demanded by the load, and compensate it according to the selected configuration:

- ▶ neutralisation of harmonics with choice of filtering setting according to the application,
- ▶ and/or correction of $\cos \phi$, lagging or leading.

Then, SineWave instantaneously adapt the compensation level.



Schematic diagram of the conditioner.
IF: fundamental current;
IH: sum of the harmonic currents.

A right-sized installation

Fewer harmonics and greater $\cos \phi$ signify less current, with the following benefits:

- ▶ smaller cable cross-sections and a reduction in the size of switchgear,
- ▶ less overloads on transformers and capacitors,
- ▶ secured operation of generator sets.

Total management of harmonics and $\cos \phi$ for installations up to 1000 kVA



Neutralisation of harmonics of server power supplies, PCs, hard disk drive motors, etc.



Neutralisation of harmonics of speed drives, DC motors, etc.

THE UNINTERRUPTIBLE POWER PROVIDER

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Where should an active conditioner be installed?

The neutralisation of harmonics and the correction of $\cos \phi$ require precise knowledge of the installation concerned.

In new installations, it is recommended that the distortion factors at different key locations should be calculated at the design stage.

In existing installations, an expert should visit the site in order to carry out a full audit with measurements of:

- ▶ harmonic currents,
- ▶ $\cos \phi$, particularly in case of IT servers.

In each case, it is important to specify the objective:

▶ either compliance with technical standards

As a preference, the active conditioner should be installed upstream of the installation (at an insertion point near the connection with the power supply distribution system),

▶ or a reduction of the level of pollution in the installation

In this case, the purpose is to neutralise the harmonics as close as possible to the principal source of non-linear loads. The active conditioner(s) should then be located downstream (secondary or terminal distribution system).

Technical characteristics

Model	SW20	SW30	SW45	SW60	SW90	SW120
Compensation capacity per phase	20 A rms	30 A rms	45 A rms	60 A rms	90 A rms	120 A rms
Compensation capacity in the neutral ¹⁾	60 A rms	90 A rms	135 A rms	180 A rms	270 A rms	360 A rms
System input						
Nominal voltage ²⁾	400 V - 20 + 15 %					
Nominal frequency	50Hz, 60 Hz, +/- 8 %					
Number of phases	3 phases with or without neutral (operation is possible with single-phase or unbalanced loads)					
Current transformers	range from 300/1 to 4000/1					
Technical characteristics						
Compensated harmonic currents	H3 to 50, full equalisation or individual equalisation					
Harmonic attenuation rate	THDI load /THDI system less than 10, at the nominal rating of the equaliser					
Correction of $\cos \phi$	lagging or leading, up to 1.0					
Response time	< 40 ms					
Overload	Limitation of the nominal current, possibility of continuous operation with current limitation					
Inrush current	< 2 x the nominal peak current					
Heat losses	1000 W	1300 W	2100 W	2600 W	4200 W	5200 W
Acoustic noise (ISO 3746)	< 55 dBA	< 55 dBA	< 60 dBA	< 60 dBA	< 65 dBA	< 65 dBA
Colour	RAL 9002					
Environmental conditions						
Operating temperature	0 to 30°C continuous, <25°C recommended					
Relative humidity	0 to 95 % without condensation					
Operating altitude	< 1000 m					
Reference technical standards						
Construction and safety	EN 60950-1					
Design	IEC 146					
Protection	IP 20 conforming to IEC 529					
EMC						
Conducted and radiated emission	EN 55011 level A					
Immunity to electrostatic discharge	IEC 61000-4-2 level 3					
Immunity to electromagnetic fields	IEC 61000-4-3 level 3					
Immunity to impulse waves	IEC 61000-4-4 and IEC 61000-4-5 level 4					

1: Maximum capacity with PC-type data processing load and with three-phase balanced supply.

2: Other voltages - 208 V, 220 V, 480 V - available on request.

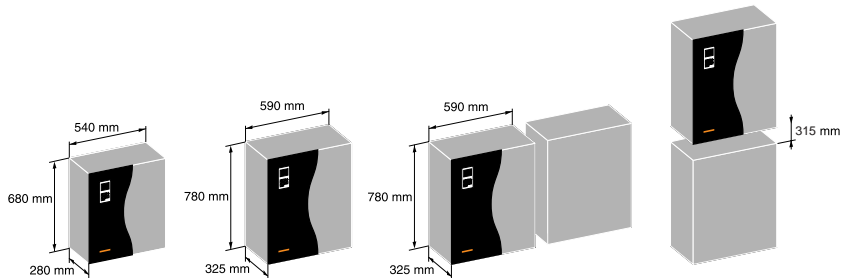


Diagram of the low voltage distribution circuit, showing the various installation points for an active conditioner depending on the required level of neutralisation.

Main features

- ▶ Global compensation or individual harmonic compensation, from H3 to H50 (selectable),
- ▶ correction of the displacement power factor, $\cos \phi$ (adjustable),
- ▶ configuration for types of load: computer loads, rectifier, etc.,
- ▶ IGBT technology and control by DSP circuit,
- ▶ 3 LEDs to indicate operating condition,
- ▶ digital 7-language display unit,
- ▶ configuration and parameter assignment menu,
- ▶ remote control (lockable),
- ▶ redundancy parallel connection facility,
- ▶ wide range of current transformers, etc.

Associated communication

JBus/ModBus card (optional)

To connect the SineWave to a building management system.

Status information card

To relay the status of the SineWave via 3 volt free contacts.

MGE PowerServices™

1-year warranty.

Associated services ⁽¹⁾

- ▶ Commissioning: setting up the SineWave in conformity with your installation,
- ▶ Teleservice: remote monitoring via the telephone system,
- ▶ Maintenance contracts: a selection of suitable maintenance packages,
- ▶ Site audit: analysis and recommendations based on the technical environment.

1: Depending on the country, visit www.mgeups.com/services.

weight: 65 kg
SW 20, SW 30

weight: 110 kg
SW 45, SW 60

weight: 220 kg
SW 90, SW 120