



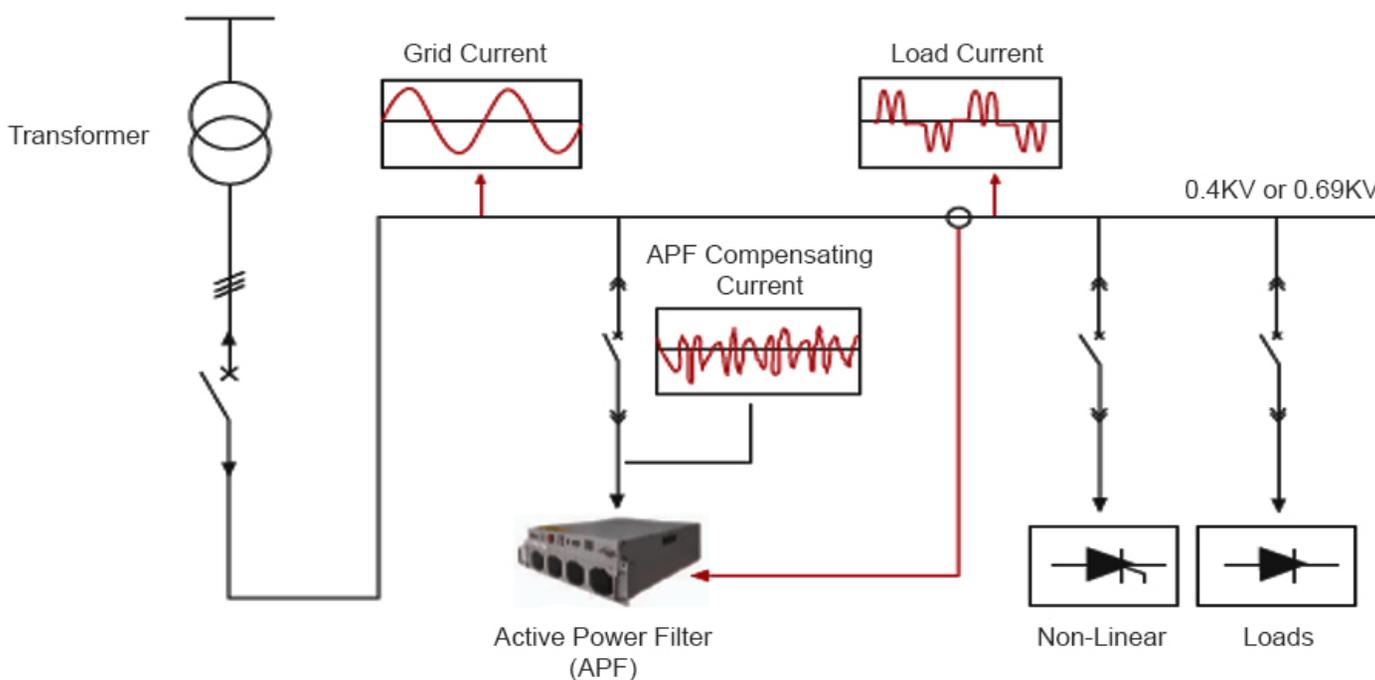
# TRINITY POWER QUALITY SOLUTIONS

## Active Harmonic Filter (AHF)



Active harmonic filters are parallel filters (which means the Load current doesn't go through the filter) that are used to reduce, or mitigate, harmonics to tolerable levels as defined by IEEE-519. These are Active Front End IGBT based topologies connected to the mains, to filter (or clean) the current wave by injecting inverse currents to cancel out the undesired harmonic components. Depending on the harmonic content, the load variation and budget it might be better to go in for a Hybrid Filter.

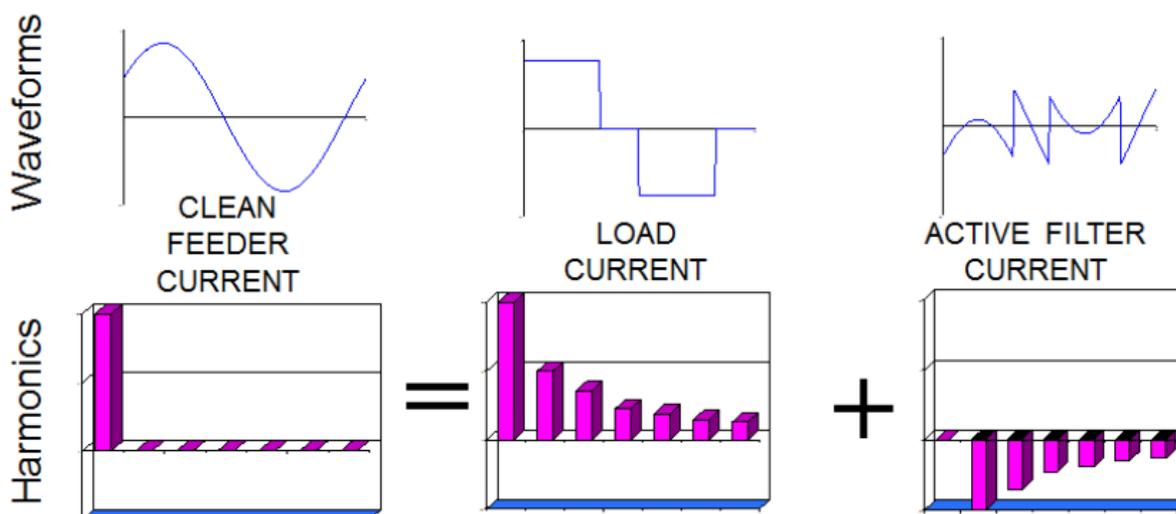
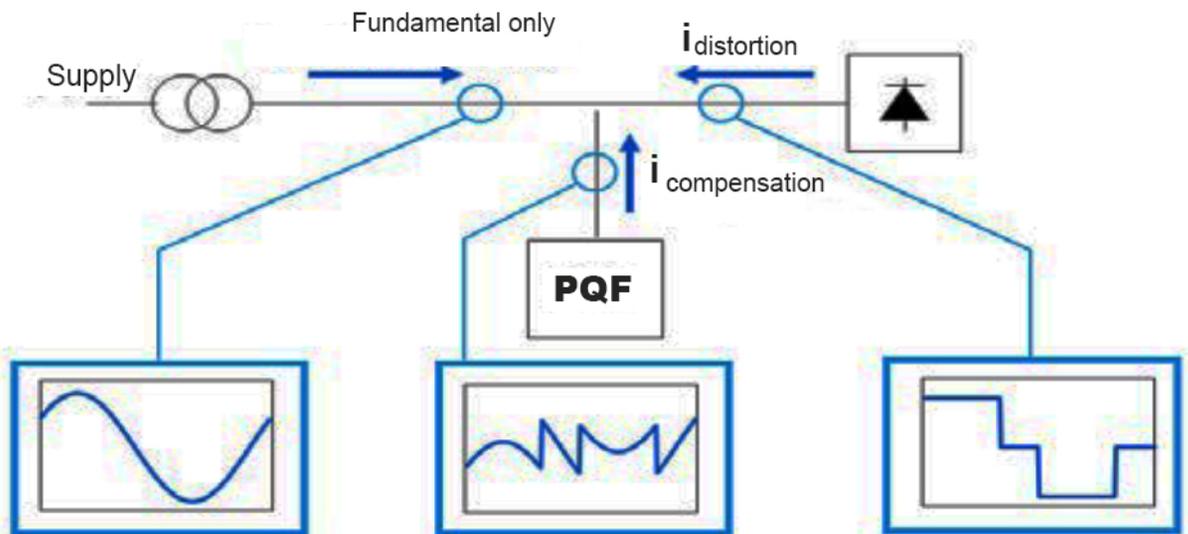
Active filters can be parallel to achieve the compensation required. Trinity active harmonic filters provide a solution for real-time cancellation of harmonic distortions created by non-linear loads to ensure compliance with IEEE 519, G5/4 and other power quality standards and recommendations. Trinity active harmonic filters are a versatile solution, easily tailored to deliver power factor improvement, voltage variation control, flicker mitigation and load balancing functionality.



## FEATURES

- Multifunctional: Harmonic, reactive power We do not have unbalance compensation so far.
- High harmonic filtering rate: Up to 98%.
- Excellent imbalance correction: Both negative and zero sequence, mitigates neutral current.
- Wide input voltage & frequency range, adapts to tough electrical environments.
- Low thermal loss ( $\leq 3\%$  of rated APF kVA), efficiency  $\geq 97\%$ .
- High stability: Infinite impedance to grid, avoids harmonic resonance problems.
- Flexible application: Modular design, embedded in standard or customized cabinet.
- Easy installation and maintenance: Plug-in installation for APF module replacement and expansion.
- Wide capacity range: 50A~150A for a single cabinet, up 10 cabinets in parallel.
- Environmental adaptability:  $-10\sim 50^{\circ}\text{C}$  temperature, compatible with diesel generator.
- Complete protection: Grid Over/Under voltage, APF over current, over temperature, and more.
- All faults are recorded in the event log, which is convenient for failure analysis.
- Excellent reactive compensation: High speed, Precise ( $-0.99\leq\text{PF}\leq 0.99$ ), Step-less, Bi-directional (capacitive and inductance) compensation.

### Shunt Active Harmonic Filtering



## TECHNICAL SPECIFICATION

Rated Voltage	AC 400V, AC 690V
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## ELECTRICAL SPECIFICATION

Input Voltage Range	AC 400V : AC 308V~480V AC 690V : AC 432V~880V
Electric Connection	AC 400V : 3P3W/3P4W AC 690V : 3P3W
Rated Frequency	50Hz +/- 10%
Input Voltage THD Range	≤15%
Rated Current per Module	AC 400V : 60Amp, 90Amp, 150Amp AC 690V : 60Amp
Rated Current per Cabinet	AC 400V : 50~500Amp (module combination) AC 690V : 60~300Amp (module combination)
Redundancy	Each module is an independent filtering system
Harmonic Elimination Range	AC 400V : 2rd ~ 50th order (Selectable) AC 690V : 2rd ~ 31st order (Selectable)
Harmonic Filtering Degree	0 ~ 100% programmable per harmonic in Ampere value
Harmonic Filtering Performance	Filter up to 98% harmonics at rated load, THDv<3%, THDi<5% after filtering
Reactive Power Compensation	Both inductive and capacitive reactive power
Imbalance Correction Capability	AC 400V : Mitigate negative and zero sequence AC 690V : Mitigate negative sequence
Full Response time	<20ms
Instant Response time	<100us
Thermal Loss	≤3% of APF rated capacity (kVA)
Output Current Limitation	Automatic (100% rated capacity)
Parallel Expansion(System)	AC 400V : Up to 5 Racks(5 modules per cabinet) AC 690V : Up to 5 Racks(5 modules per cabinet)
Switching Frequency	AC 400V - 60A, 90A : 20kHz AC 400V - 150A : 20kHz AC 690A : 20kHz
Instant Response time	DSP control
Thermal Loss	Modbus Protocol, RS232/485
Output Current Limitation	PQC Monitor Software (Optional)

## ELECTRICAL SPECIFICATION

IP Grade of Cabinet	IP20, IP30 or customization
Cooling method	Forced air cooling
Noise Level	AC 400V : < 65dB(A) @1m (Module) AC 690V : < 70dB(A) @1m (Module)

## ENVIRONMENTAL REQUIREMENT

Ambient Temperature	-10~50 °C
Relative Humidity	0~95%
Altitude	≤ 1000m Rated Capacity, 1000-2000m (derating 1% per 100m)

# TRINITY

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\* Specifications are subject to change without notice due to continuous improvement.