AHFplus
Active Harmonic Filter (AHF)

Harmonic mitigation for maximum energy efficiency.

What is harmonic distortion

A nonlinear load absorbs a distorted current, which is the sum of an AC current at the grid frequency (Fundamental) and other AC currents with frequencies that are multiples of the grid frequency (Harmonics). The circulation of distorted current also causes distortion of the grid voltage.

A distorted grid degrades the reliability and productivity of equipment, increases energy consumption and maintenance costs, and impacts their service life.
Current regulations provide for penalties in case of exceeding the allowed limits, including the suspension of supply in case of non-compliance.

BDF Digital's AHFplus mitigates harmonic distortion and restores maximum efficiency and productivity.

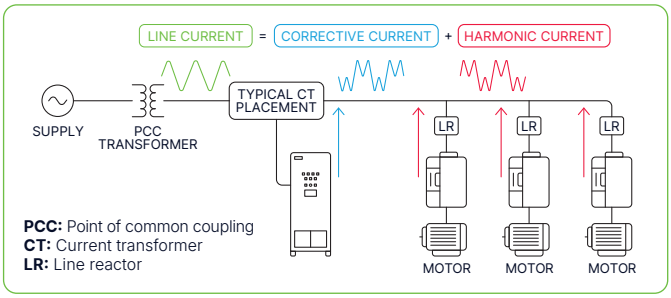
How the AHFplus Active Filter works

The active filter measures the currents on the power line and generates the required harmonics to cancel out the distortion. BDF Digital's AHFplus filters are **easily installed without modifying existing plants** and feature advanced functions that allow for immediate commissioning.

AHFplus regulates the power factor (cos(Φ) and simultaneously eliminates up to 17 selectable harmonics based on the specific characteristics of the system to be compensated. The continuously regulated power factor and the absence of resonance phenomena make AHFplus a superior alternative to traditional capacitor banks.

Advantages:

- RESONANCE CONTROL: DETECTION AND MITIGATION
- COMPACT (REDUCED EXTERNAL FOOTPRINT), ROBUST IN HARSH ENVIRONMENTS, AND WITH AN EXTENDED UNIT SERVICE LIFE
- EFFICIENT OPERATION, FEWER COMPONENTS REQUIRED, AND REDUCED COMPLEXITY
- EASY MAINTENANCE: MINIMAL SPARE PARTS REQUIRED, WITH REDUCED MAINTENANCE TIME AND COSTS
- REDUCED MANAGEMENT EXPENSES AND LOWER TOTAL OPERATING COSTS
- POWER FACTOR CORRECTION
- IMBALANCE COMPENSATION
- SHORT-TERM RETURN ON INVESTMENT



Applications:

- WATER/WASTEWATER TREATMENT
- NAVAL INDUSTRY
- OIL & GAS / MINING INDUSTRIES
- HVAC SECTOR
- AIRPORTS
- HOSPITALS
- EXISTING INDUSTRIAL PLANTS WITH POWER FACTOR AND HARMONIC DISTORTION ISSUES

bdfdigital.com info@bdfdigital.it

100% ITALIAN TECHNOLOGY MADE IN ITALY

Technical features

Connection type	Trasformerless
Nominal current	See table below
Switching frequency (FPWM)	5-18 kHz
Inverter type	2 levels VSI (Voltage Source Inverter)
Grid voltage (+/- 10%)	400Vac or 690Vac
Grid frequency (+/- 5%)	40-60 Hz
Modularity / Parallel / Redundancy	Available
Compensable harmonic range	From the 5th to the 35th harmonic
Harmonic distortion attenuation factor	> 95% @ (I<=In)
Reactive power compensation	Continuous (inductive/capacitive)

Programming / Communication

Supervisor/Device predefined comm.	Modbus RTU and/or Modbus TCP-IP
Fieldbus	CanOpen, EtherCAT & ProfiNet, Profibus
HMI	TFT screen (800×480px) IP65

Installation

Altitude	Up to 1000 m of altitude, with a 1% derating for every 100 m above 1000 m (max 2000 m)
Temperature	Normal: -10 °C to 40 °C
Humidity	Max. 95% non-condensing during operation
IP protection	IP20/IP34 IP20/IP34 or higher upon request

Certifications and Compliance with Standards

Certification	CE
EMC immunity	EN/ IEC 61000-6-2, Industrial level
EMC emissions	EN/ IEC 61000-6-4, Class A

AHFplus filter with OPDEplus series

The active AHF filter by BDF Digital improves power quality and increases system efficiency.

OPDEplus		POWER FACTOR correction	Harmonic compensation
Size	**Model**	**Continuous reactive power (1) [kVAR]**	**Total effective current (2) [A]**
XL	**40A**	35	48
	48A	41	55
BF1	**70A**	58	79
	90A	76	103
	110A	89	118
	150A	122	137
BF2	**175A**	150	195
	220A	187	216
	250A	200	250
BF3	**310A**	256	285
	370A	281	415
	460A	294	435

(1) Reactive power correction with compensation of the fundamental frequency only, value referenced to 400Vac.
(2) Total effective current provided in harmonic compensation mode. Value referred to 400 Vac with a maximum phase imbalance of 3%.