

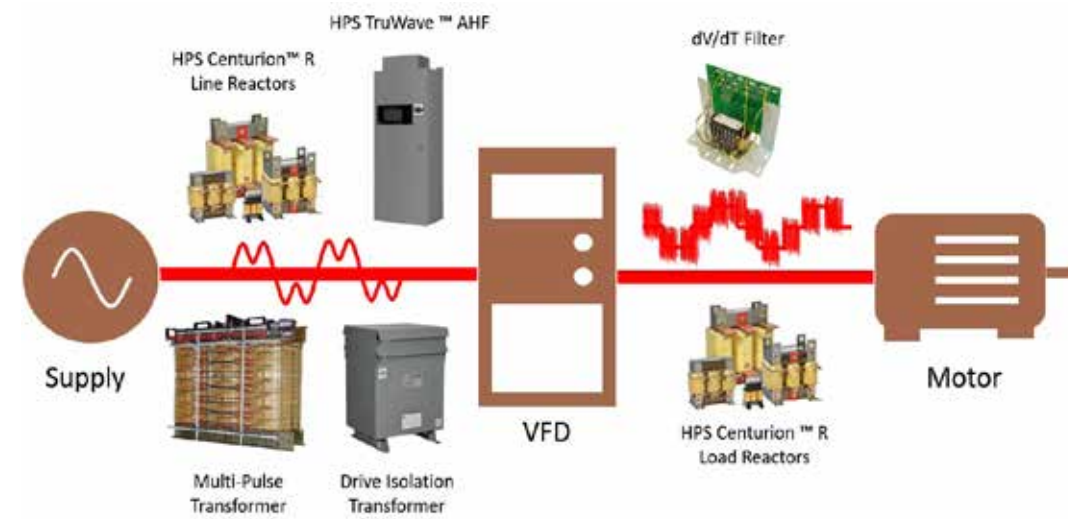
OUR EXPERIENCE

The variable frequency drive (VFD) market covers a broad range of applications and environments, demanding a high level of performance and reliability. Adding a VFD to any system results in increased efficiency, better process control and reduction in the wear and tear of the equipment. However, VFDs also cause power quality issues such as harmonics on the line side and reflected wave voltages on the load side.

VFD's can also be susceptible to power quality issues from other systems that can damage a VFD or cause nuisance tripping. HPS can provide comprehensive solutions to these costly problems.

Whether it's a standard transformer, reactor, filter or a custom built magnetic, HPS has the experience to provide a solution for your drive application.

Potential Drive System Solutions from HPS



CANADA
Hammond Power Solutions
595 Southgate Drive
Guelph, Ontario N1G 3W6
Tel: (519) 822-2441
Fax: (519) 822-9701
Toll Free: 1-888-798-8882
sales@hammondpowersolutions.com

UNITED STATES
Hammond Power Solutions
1100 Lake Street
Baraboo, Wisconsin 53913-2866
Tel: (608) 356-3921
Fax: (608) 355-7623
Toll Free: 1-866-705-4684
sales@hammondpowersolutions.com

ASIA
Hammond Power Solutions Pvt. Ltd.
D. No. 5-2/222/IP/B, II-Floor, Icon Plaza
Allwyn X-Roads, Miyapur, Hyderabad 500 049
Tel: +91-994-995-0009
marketing-india@hammondpowersolutions.com

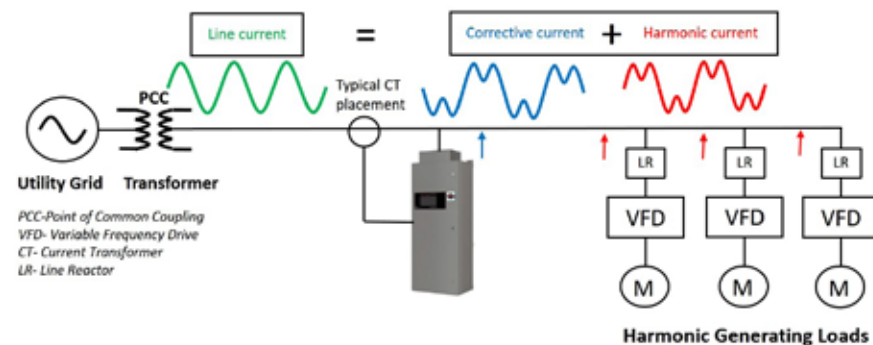
EMEA (Sales Office)
Hammond Power Solutions SpA
Tel: +49 (152) 08800468
sales-emea@hammondpowersolutions.com

Line Side Drive Solutions

HPS TruWave™ Active Harmonic Filter

HPS TruWave™ Active Harmonic Filter (AHF) is a comprehensive and flexible solution for harmonic mitigation. It provides advanced control and proven reliability that your facility needs to solve harmonic problems generated by non-linear loads such as variable frequency drives.

The AHF monitors load current and quickly responds to power system distortion as it develops. The AHF injects a corrective current to effectively cancel out harmonics produced by three phase non-linear loads. The result is a reduction in harmonic distortion to below 5%, complying with the IEEE-519 recommendations.



Distributed by:



www.hammondpowersolutions.com

Literature No.: HPSDS16
Issue Date: April 2020



Solutions for Variable Frequency Drive Applications

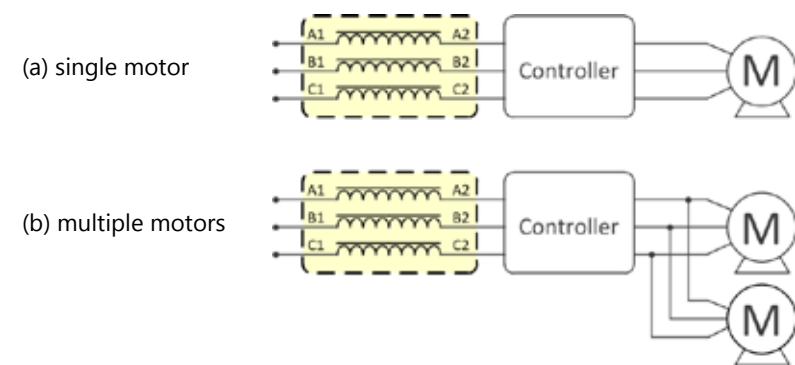
Line Side Drive Solutions Continued

HPS Centurion™ R Line Reactor

The HPS Centurion™ R line reactor provides a U.L. listed solution to many common drive issues. As an input line reactor, the HPS Centurion R offers the following benefits:

- Minimizes harmonic current
- Attenuates voltage and current harmonics to reduce voltage notching
- Improves True Power Factor by reducing overall current distortion
- Mitigates drive nuisance tripping by attenuating voltage transients from sources such as PFCC, utility switching and lightning

When coordinated with a HPS TruWave Active Harmonic Filter, the system can reduce harmonics from variable frequency drives to under 5% THD.



HPS Drive Isolation Transformer

HPS Drive Isolation Transformers (DITs) are designed to meet the rugged demands of both AC and DC variable speed drives and also to provide any required voltage change. The harmonic distortion generated by non-linear loads can have damaging effects on the transformer and electrical equipment connected to the circuit.

Drive Isolation Transformers are used for VFD applications to create isolation between the source and loads as well as impedance to the line. DITs offer the following benefits:

- Changes voltage where required
- True electrical isolation and dedicated grounding point
- Limits maximum short circuit current

HPS offers both standard efficiency DITs, primarily for the US market, and high efficiency versions required for Canada to meet NRCAN 2019 efficiency regulations.



Standard Efficiency



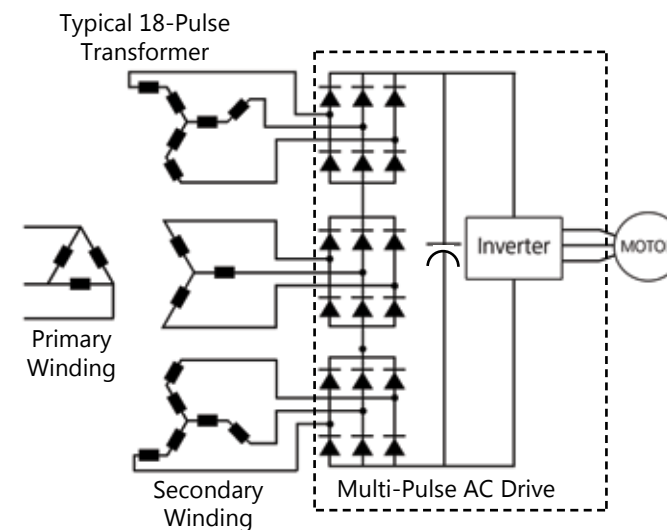
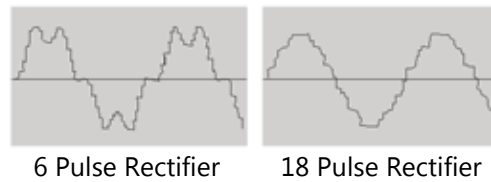
High Efficiency

HPS Multi-Pulse Transformer

Multi-Pulse transformers are designed specifically for harmonics, voltage distortion and other unique characteristics associated with individual manufacturer's drive systems. They provide the required supply voltage with the desired phase angle between secondary voltages for VFD systems/converters.

HPS has significant experience with 18, 24, 36, 48 pulse drive/inverter duty transformers and auto-transformers in both low and medium voltage applications.

Typical Drive Current Waveforms



Custom Reactor Solutions

Through our extensive application and design knowledge we are able to provide both iron and air core reactors as well as chokes for a variety of low and medium voltage solutions:

- DC link chokes
- Current limiting reactors

In addition, HPS can supply reactors to be integrated as a component in a variety of filters and harmonic traps.

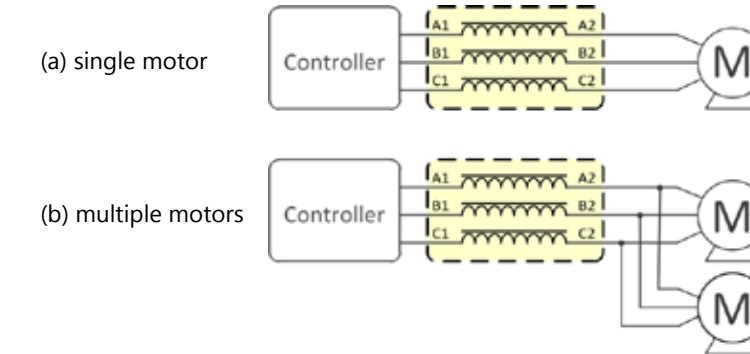


Load Side Drive Solutions

HPS Centurion™ R Load Reactor

The HPS Centurion™ R load reactor provides a U.L. listed solution to many common drive issues, with the following benefits:

- Reduces the motor's operating temperature & audible noise
- Mitigates motor bearing failures and insulation damage as a result of the reflected wave phenomenon
- Enhances the overall performance and life expectancy of the motor



dV/dT Filter

The HPS dV/dT filter provides protection for motors by slowing the rate of voltage increase and minimizing the peak voltage that occurs at the motor's terminals and along the cables feeding the motor. It does this by combining the harmonic current limiting ability of an AC line reactor plus a resistive capacitance circuit that forms a damped, low pass filter. HPS dV/dT filters are specifically designed for drive/motor applications with long lead lengths (usually where the motor cable length is 100 feet and greater).

