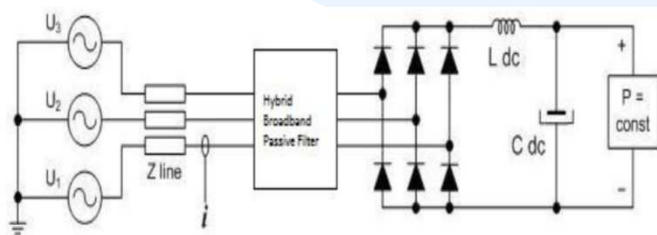


HYBRID BROADBAND PASSIVE FILTER

For Harmonic Mitigation



The HBPF is connected in series with a single VFD or a group of VFDs to bring down Harmonics ATHD to about 5% level from initial level of about 50% - 60%. As it is connected directly near to load it provides maximum benefits of Harmonic Mitigation and improves efficiency and life of VFD installation. VFD is the most commonly prevalent nonlinear load. Applying Harmonic Mitigation solution at VFD level will clean the entire power system and reduce harmonic loading on Cables, Transformers etc. Besides 3 to 4% Active Power savings life of installation will increase. The transformers will run at lower operating temperatures and the transformer oil filtration frequency will come down.



SALIENT FEATURES

- Hybrid Design- It is combination of series and shunt broadband filters.
- Targets all harmonics up to 19th order.
- Hybrid Broadband Passive Filter limits Current Distortion to less than 6.5% (at Full Load) along with power factor correction up to 0.99 plus.
- Blocks Line Surges.
- Payback within 2 Years.
- Prevents voltage sags and swells.
- Provides Reactive Power Compensation.
- Low self- consumption - about 1% of running load.
- Improves Energy Efficiency about 2-4 % (Active Power Saving)
- Meets IEEE-519-2014 Standards.

Rated Voltage	415 V +/- 10%
Rating	As per VFD rating (KW)
Rated Frequency	50-60 Hz +/- 2%
THDi	As per IEEE 519 - 2014
THDv	As per IEEE 519 - 2014
Efficiency	>98 %`
High Potential Test Voltage	10 KV
Degree Of Protection	IP42
Cooling	Forced Air
Ambient Temp.	10-50 Deg. C.
Expected life	200,000 Hrs.
Standard	IEEE 519-2014

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CASE STUDY (Volkswagen India Private Ltd.)

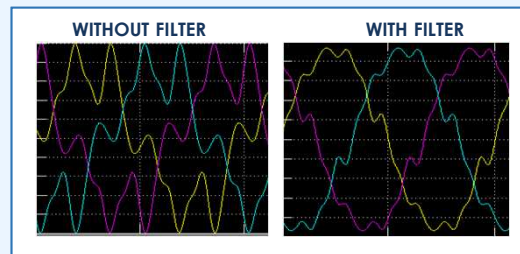
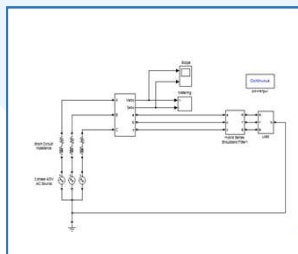
Harmonic Data was taken from 110KW VFD drive at Volkswagen Factory, Chakan Maharashtra.



BENEFITS

- Current harmonics reduced from 44.3% to 6.1% at full load condition.
- Power Factor is improved near to unity from 0.95 lag.
- Reduction in KW at full load condition = 2.1KW
- Active Power Saving about 2% of VFD rating at transformer due to reduced losses.

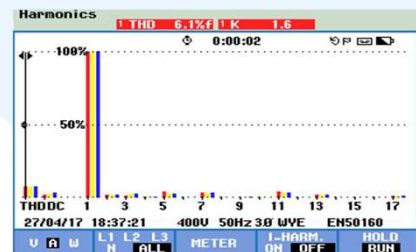
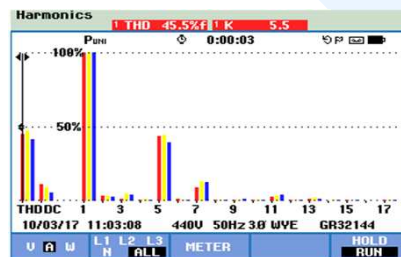
SIMULATION MEASUREMENT USING MATLAB



MEASUREMENT DONE AT SITE USING FLUKE 435

Current THD (Before Installation)

Current THD (After Installation)



APPLICATION

- Irrigation industry
- Pulp & Paper Industry
- Oil Industry
- Textile Industry.
- Pharmaceutical & many more.....

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