

Hybrid PFC (SHR-hSPC)

Shreem hybrid smart power conditioner is an advanced Real Time Power Factor Correction (RTPFC) designed to address major power quality issues. Shreem SHR-hSPC is a unique combination of active i.e. IGBT based inverter module with passive APFC to provide step less, fast and smooth reactive power correction. Apart from delivering instantaneous reactive power regulation, it can manage load unbalance, neutral current correction and harmonic mitigation as per rated active capacity. This is an advanced technology and proven as the best option against conventional APFC & better economical solution over complete active

Principle of working

Centralized High speed DSP based hybrid controller having inbuilt next generation intelligent, highly efficient APFC relay is given with line side CT & PT feedback from LV or HV side. It generate & controls both high frequency, high speed IGBT based active i.e. SVG as well as contactor or thyristor switched Capacitor bank to regulate the reactive power in real time and step less manner as shown Fig.No.1

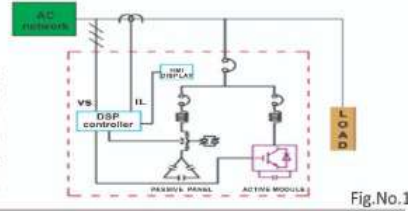


Fig.No.1

Detuned filter capacitor bank compensate major part of reactive power demand, while active module correct fine tuning of reactive demand both in lag and lead side with small capacity. It fills the fine gap between demand and correction done by capacitors causing under and over compensation which can be termed as window filling correction as shown in fig-2

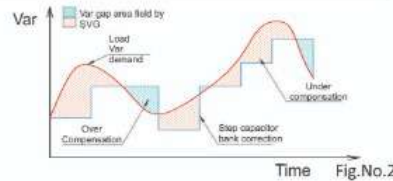


Fig.No.2

Technical Specification

- Nominal voltage: 440 volts (+/- 10%), 50Hz (+/- 5%), 3P-4W
- P.F. correction: 100% Lag side of APFC as well as SVG and 100% Lead of SVG capacity available in hybrid APFC
- Type compensation: Step less with SVG capacity available
- Active module: IGBT based inverter with 3 Level Topology with high switching frequency
- Passive module: Contactor or Thyristor switched capacitor with series detuned reactor with maximum 14 no. of steps
- Hybrid controller: High speed DSP Controller to control PWM IGBT switching of active module as well as inbuilt intelligent APFC controller with Relay and TTL output
- Reaction time: 100 μ Sec
- Correction time: 10 mS
- Protection class: IP 3X/4X
- Design Temp.: 0 to 45°C

Features of Hybrid PFC / Filter Panel

- High speed fully digital controlled technology with Artificial Neural Network (ANN) control algorithm
- SVG in shunt with heavy duty detuned passive filter integrated to make Hybrid APFC system with common centralised controller.
- Single advanced 32 bit DSP Hybrid controller with 7" touch screen HMI, synchronized with both active and passive part. HMI is real time Power Quality Analyzer with 15-channel Oscilloscope feature.
- New technology trend over APFC system.
- Configurable and easily customizable.
- Optimum utilization of detuned capacitor bank to increase capacitor life.
- Adaptability to accommodate existing capacitor panel which already installed in plant
- No-Load compensation feature is inbuilt
- Ideal and cost effective solution for KVAh billing
- Real time remote monitoring and control is possible with cloud based communication via CAN bus / internet over Wi-Fi
- Optimized equipment losses



Applications

- Foundry / machining shops
- Chemical and Food Processing plants
- Cement factory
- Steel plants
- Oil and gas exploration
- Automotive industries
- Pulp and paper industries
- Mining industries
- Ports and shipyards
- Textile industries
- Rubber and plastic industries
- Water treatment industries
- Printing and packaging industries
- Data centers and IT facilities
- Metro stations and rail transports
- Medical facilities
- Office building and banks
- Theme parks and shopping malls
- Solar plants & wind mills

Advantages over conventional APFC Panel

Particular	Hybrid APFC	APFC
Step less correction	Possible	Not possible
Bidirectional compensation	Yes, both Lag and Lead	Only Lag Compensation
Response time	Fast (in mS)	Slow (in sec)
Unbalance correction	Yes	No
Capacitor switching	Less as compared to APFC	High
Maintenance	Low	High



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