A SMART SOLUTION FOR REACTIVE POWER

POWERZONE

A SMART SOLUTUIN FOR POWER FACTOR IMPROVEMENT POWERZONE SYSTEMS(INDIA)PRIVATE LIMITED

Is a strongly research and development base Company in the field of Reactor Power Compensation Systems with practical experience and versatile Market Response Team. It is the art of save Power and not to generate the Power by this simple means with highly intelligent microprocessor based to control the connection and disconnection of capacitor steps to achieve required target Power factor. Source of requirement for the APFC Systems: Inductive loads in the LT Network i.e. commercial establishments like offices, Industries, AC/DC Drives, Reactors, Inverters, Compressors, Inductive furnaces etc. are causing major energy losses, means operate on poor/excess (i.e. legging /leading) power factor. The reactive power required in such plants varies rapidly with each energy cycle. The response speed of compensation with fixed capacitors are not suitable to take care of rapidly varying loads. The normal conventional i.e. Contactor switched APFC's have limitations due to switching, slow response measurements and computation Systems. The normal conventional operates with electro mechanical switches to switch ON and OFF are not suitable for fast varying load.

Advance Microprocessor Systems

Three/Single Phase Sensing

Fast Response Thyristor System

Switch off facility when Generator is ON (Optional)

TOTAL SOLUTION FOR POWER FACTOR PROBLEM.

Now-a-days the accurate compensation of reactive power required to avoid penalty imposed by various utility company for Low/high power factor in the system which is the need of today.

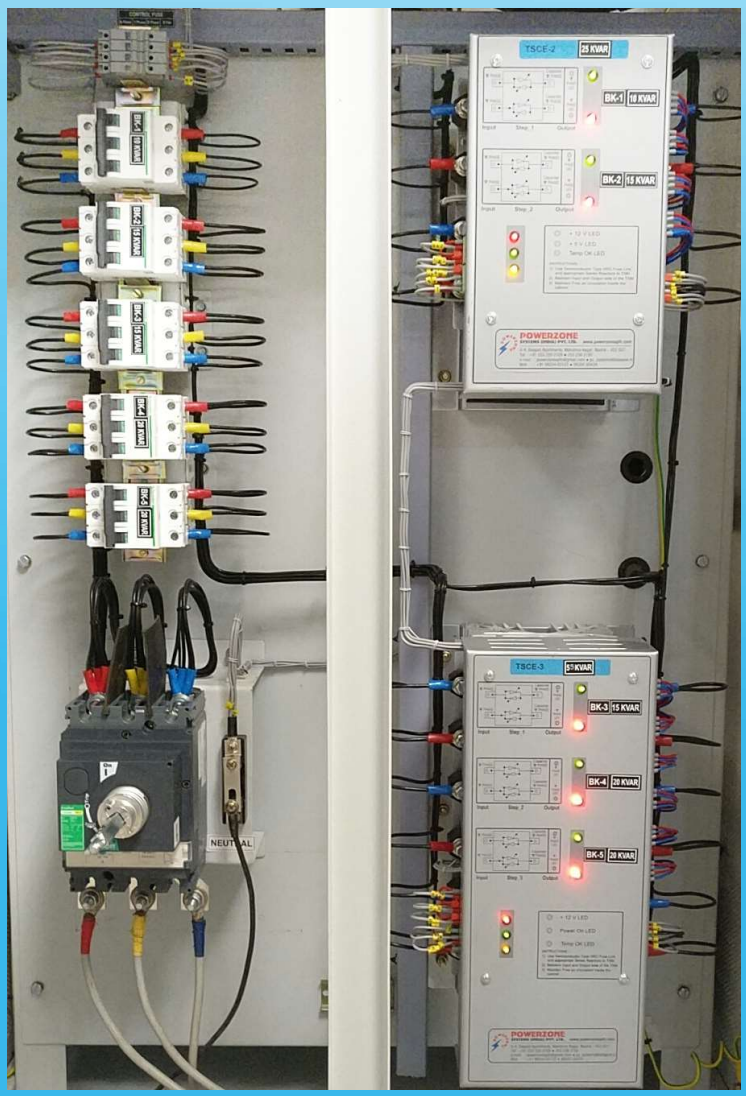
Working Principle of Powerzone APFC system:

It is the best intelligent Instrument/Systems with built in microprocessor able inform /work about electrical network status with real/fine RMS measurement of each/individual each/single phases and to take complex/correct decision and do large number and correct calculations for Automation connection and disconnection of capacitor steps/banks as per load requirement to achieve and maintain target Power Factor. All three/single phase parameters i.e. voltage, current, power factor is sensed by the related potential transformers, current transformers and from the feedback with fast signal of all electrical parameters are sensed and calculated.

POWERZONE APFC Systems switching capacitors ON/OFF is done by solid state relays, thyristors which are totally and automatically connected /disconnected with accurate zero crossing which effects to allow switch on/off without transient current. This systems senses the KVAR requirement to each cycle and injects/remove capacitors to achieve the set target Power Factor totally Automatically.

Special Features of the Controller and APFC System:

1. Operates in three modes of operation -Auto Mode, Manual Mode and Programme Mode.
2. Display of all electrical network parameters i.e. voltage, current, power factor of phases, KW, KVA, KVAR of Phases, capacitor current of phases ,cumulative KVAR,KWEH,KVARH.



TECHNICAL SPECIFICATIONS

Controller Function:

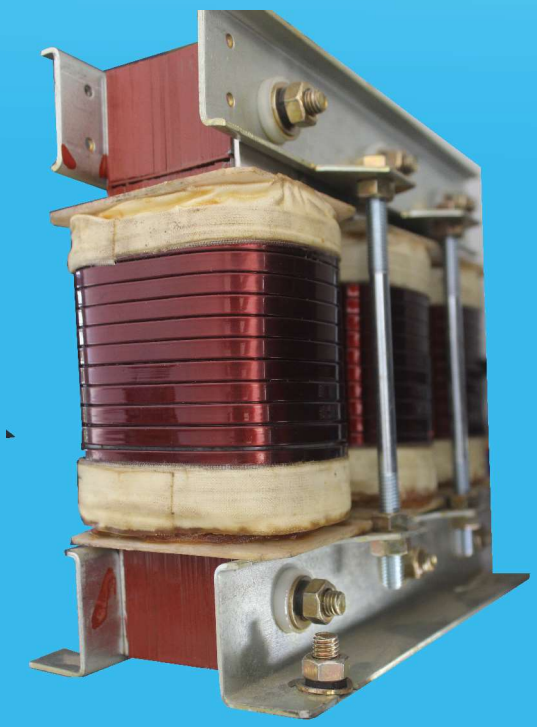
1. Built with microprocessor and based on FCP (Fast Computerised Programme) system.
2. Intelligent APFC/instrument able to accuracy inform about electrical network status with true RMS measurement of each/single phase and take complex/accutare decision and do large and accurate number of calculations for automatic connection and disconnection of capacitor bank/steps as per load requirement to maintain target Power factor to the maximum benefits from utility company.
3. Three/Single sensing suitable for single/three phase unbalance loads and perfectly suitable for Indian supply condition. Memory Storage (Optional) Memory storage systems records and storage various electrical parameters on hourly/half hourly basis for 45 days. Printout facility is available at extra cost.

LED Indications:

1. B1 to B16 : To show ON / OFF status of Capacitor Bank.
2. PON : To indicate Power ON.
3. RMT : To indicate Remote Communication.
4. DATA DNLD : To indicate Communication. (ON Data downloading)
5. INST PRINT : To indicate printing of instantaneous Electrical data is in progress.
6. AUTO : To indicate the Controller is in Automatic Mode.
7. MAN : To indicate the Controller is in Manual Mode.
8. PROG : To indicate Controller is in Programme Mode.
9. STD BY : To indicate some problem in functioning of the system.

Technical Characteristics of Controller:

1. Operating Voltage : 415/440 V AC, 3phase, 4 wire input.
2. Accuracy : +/- 2%
3. Frequency : 50 Hz, 60 Hz.
4. Rated Current : In/5A or In/1A
5. Power Consumption of Controller : 5 VA
6. P. F. Setting : 0.85 lag to 0.95 lead.
7. Measuring Voltage : 30-300 V AC, Line to Neutral.
8. Sensitivity : 40mA / 10mA, depending upon CT output.
9. Switching Time : Selectable from milliseconds to minutes.
10. Alarm Relay : Available optional
11. Display : 4 Line, 20 Characters, Backlit LCD.
12. Storage Parameters : Voltage, Current, P. F., Power for all three phases.
13. Protection : High Voltage, Low Voltage, Imbalance Voltage, Zero/Under loaded Current / Over Temperature, Capacitor Current Overload, Incorrect Phase sequence & High Capacitor Current surge due to external influence.
14. Housing : 144 X 144 mm,96x96mm
15. Cascade Connection : Two Controllers can be cascaded.
16. Computer Interface : RS232 / RS485* standard output port to interface with advance Software* to take control of complete system. (*optional)
17. Switching Device : Suitable for Hybrid/Thyristor/Contactor.
18. Connections : All connections through plug in Connectors.
19. Connection Diagram : At rear side of Housing.



FEATURES OF CONTROLLER :

1 Programmable upto 16 steps.
2 Smooth & Surge free switching of capacitors.
3 Self-Diagnostic capability.
4 Four line LCD Display of Electrical parameters of load end as well as transformer end:
- Time, Data & User ID.
- Voltage of each phase.
- Load Current of each phase in 3 digits.
- Capacitor Current of each phase & each bank.
- KW for each phase.
- KVA for each phase.
- KVAR for each phase.
- Cumulative kW, KVA & KVAr of all three on average basis.
- Injected capacitance (KVAr) for each phase to reach target Power Factor (P. F.)
- Electrical Active Energy (KCRH)
- Phase Sequence Indication.
- Programmable Parameters.
- Pre Indication of control actions.
- THD% both voltage & current (optional).

5 Programmable Parameters:
- Response Time 40/60 milliseconds to 120 seconds.
- CT Ratio – 8 selectable values upto 4000A.
- Minimum 1st capacitor step – 3 KVAr to 90 KVar (140 optional)
- 18 nos. Switching programs available.
- Target P.F. – from 0.85 lag to 0.95 lead.
- Phase sequence synchronisation.

6. Protection:
- Avoid high voltage & flash across busbar.
- Capacitors protected against High Voltage.
- Over temperature protection of Thyristors.
- Protection against Voltage imbalance & very Low Voltage.
- Protection against Zero Current in any of the phase.
- Auto restart facility (after 'fault' is disappeared)
- Keyboard lock facility (optional)

7 Display Kit:
User friendly key board is provided for the following:
- UP & DOWN key is provided to view the display parameters by scrolling.
- MODE key is provided for changing the functions of the controller in each mode viz.

a) Auto Mode
b) Manual Mode
c) Programme Mode to change programmable parameters as mentioned above.
d) Standby Mode

8 Computer Interface for taking printouts.
9 RMT Key: For remote communication through interface.

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