

FIRST TIME IN INDIA 3rd GENERATION STEP LESS APFC

No Capacitors Switching ★ No over voltage stresses ★ No Harmonic Generations ★ No Multiple Contactors



JAGDISH ENTERPRISES INTRODUCES AN IDEAL SOLUTION FOR POWER FACTOR CORRECTION.

Three STAGES in Power Factor Controllers.

1 ST STAGE	2 nd STAGE	3 rd STAGE
Fixed value capacitors are added in parallel to individual motors or loads. This is a Crude method of Power Factor Correction.	In this stage - The conventional Power Factor Controller that incorporates a Set of Discrete value capacitors that are switched ON & OFF to the value required through a set of Contactors & a POWER FACTOR SENSING RELAY.	There is 3rd Stage APFC that continuously feed VARIABLE CAPACITANCE in the line. The technology of continuously varying capacitance and has thus introduced STEP LESS POWER FACTOR CONTROLLERS.

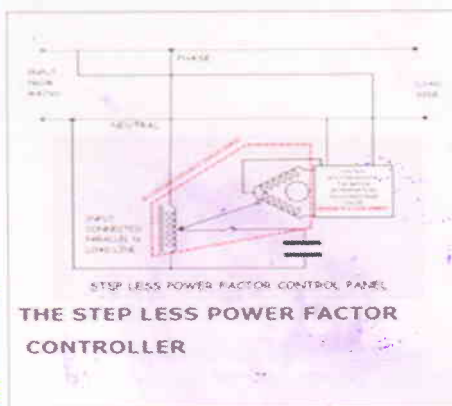
The unbalanced type APFC provided ideal correction to individual phases.

A small sized Unbalanced Type unit will further correct Power Factor of individual phases by correcting PF of Individual phases from Average figures of say 0.92-0.97 to 1 & thus further saving 3-4 % on Electricity Bills. Say add 10 KVAR or 20 KVAR Constantly variable capacitors in Individual phases.

Why 3rd generation APFC is Useful for Your Industry ?

The existing system has some serious disadvantages. You cannot have ideal compensation to reactive power as because of the steps only a near about compensation to Power Factor is available. The System will always be over compensated or under compensated. There exists a fear of over improvement and a name is given to this as 'power factor correction better than 0.9'. With combination of increments in sizeable capacitor steps, and abrupt full current switching, over improvement could cause over voltages of as much as 40 % on affected power lines and subsequent damage to motor driven equipment under certain conditions of operation. The capacitor switching is primary cause of trouble in computer receiving power from lines. True in the Capacitive switching circuits, today switching is made at ZERO VOLTAGE CROSSING, but this feature achieves a little because in capacitors, when voltage curve is at zero, the current curve is at peak and vice versa. In the absence of Sensitive Electronic loads, the operation of contactors is a rough & violent physical action resulting in frequently blowing of fuses. This results in watt losses & in this interim period, the kilowatt demand increases operational expenses until those fuses are replaced. With rectifier transformer winding, a resonant circuit develops whose frequency closely coincides with frequency of said 5th Harmonic, making the current seriously dangerously uncontrollable. The capacitors work at all time at full rated voltage and at certain switching instances the peak voltage is enhanced beyond the rated peak voltage of capacitors which can destroy or reduce the life time of these components. Since the switching of multiple capacitors through contactors is involved, plethora of harmonics gets introduced in the line & thereby LINE FILTERS of suitable rating have to be installed. It is like first introducing the NOISES & HARMONICS & then putting circuits & chokes to mitigate their evil effects.

AUTOMATIC POWER FACTOR CONTROLLER 3rd GENERATION



Green Dot Electric Limited has developed a Variac Based Power Factor Panel. A Motorized Variable Transformer (the Motorized Dimmer Dot) is used a source of Variable Voltage that is applied to the required value of Capacitance rated for 440 Volts or so. There are no switching of Contactors or interruption of CAPACITIVE CIRCUITS and thus no harmonics get introduced. In case the supply goes off & comes in ,delay is provided to give time for discharge of capacitors and then to start again at zero voltage input from the Dimmer Dot.

There is further advantage in our system that the power change is proportional to the square of applied voltage to the capacitors.

The Power Factor Sensing relay has been developed from an advanced Micro Controller that senses the existing Power Factor & rotates the Variable Transformer forward or backward increasing or decreasing the output voltage of the Variable transformer, to provide required voltage across the capacitor so that the adjusted & the required power factor is always maintained with respect to ever varying load of the establishment. The LED Read out panel of the Relay Box reads Input Voltage & adjusted Power Factor Thus there is step less Varying capacitance that is made available to suit the varying load. There

is no switching surge & Power factor is maintained accurately. There are no contactors & no complicated wiring.