



POWER QUALITY CASE STUDY - AUTOMOBILE PLANT

BY NAAC ENERGY CONTROLS PVT. LTD.

HOW IMPROVING POWER FACTOR CAN INCREASE PRODUCTION AND REDUCE DOWNTIME IN AUTOMOBILE PLANTS

Robotic welders in Automobile plants are mainly employed for chassis welding and are single-phase equipment having 415 V phase to phase input. They are used in large numbers in any Body Shop for vehicle manufacturing. This load, in particular, poses major challenges as mentioned below:

1. Highly fluctuating and fast varying Load
2. Single-phase Robotic welders Create Unbalance in Line Currents
3. Poor highly fluctuating power factor varying between 0.3 lag to 0.5 Lag
4. Voltage drops associated with poor power factor may affect weld quality.
5. Very difficult to compensate Power factor with conventional systems

It was in the year 2003, one of the car factories in Greater Noida was facing a huge problem. In case of power failure, they were not able to operate their Body Shop load on backup Genset power. Multiple synchronized Genset used to trip if the Body Shop load was operated. All other loads use to operate, creating a backlog of production from Bodyshop. Genset manufacturer Cummins approached us to design and implement the solution.

Till that period the only solution offered for such problems was Stat Con which was IGBT based. It was very costly, and operational losses were very high. We pioneered in implementing for the first time in India, the Real-time reactive power technology with unbalanced configuration creating banks which operated in phase-to-phase configuration. The cost of the system was reduced to 50% compared to Stat Con of equivalent rating, but more importantly, the operational running cost was very low. Our system design is very reliable and has been performing since.

The design of the RTPC was replicated and supplied directly and through Cummins India to various Automobile manufacturers all over India. Mercedes, BMW, Shriram Pistons, Denso, JBM and SKH Metals are among the few companies employing the system. Most of the companies have recovered the cost in a few months.

1. With improved power factor near to unity
2. Lower operational cost (Lower losses) than the station
3. Very low maintenance cost

Hundreds of systems supplied by us are operating all over India on Grid and DG supply giving a huge advantage to companies in terms of improved power quality, higher uptime, Voltage stabilization, improved product quality and better PF compliance.