The Toyota Indus Motor company, located at Port Bin Qasim Industrial Zone near Karachi, is the only manufacturing site in the world where both Toyota and Daihatsu brands are manufactured under the same roof. Along with state-of-the-art production technology, the facility has also implemented the world renowned Toyota Production System, that eliminates waste or ‘muda’ to enhance efficiency and productivity.

**Customer problem statement**

To create the body of the car, a spot-welding process is deployed. This requires high levels of current repetitively for several milliseconds during the operating cycle. The welders also operate in an asymmetrical manner across phases. All this leads to highly fluctuating reactive power and an unbalanced load current, causing large and uneven drops in transformer voltages.

Additionally, the facility at times faces intermittent supply and frequent power outages. During such instances, the Toyota Motors facility is supported by standby power from 1500 rpm diesel generators. “During a utility power outage, when operating on one 2250 kVA generator, the number of operating welders had to be reduced from 95 to 40 due to disruption caused by the high amount of reactive power and unbalanced currents drawn by the spot welding process. To operate at full capacity, two additional 725 kVA or one 1600 kVA generator had to be installed,” says Fahad Iftikhar, Manager, Toyota Indus Motor Company.
ABB Solution

After a detailed study of the various electrical parameters, ABB’s stepless reactive power compensator, PQC-STATCON, was proposed as a solution. The PQC-STATCON technology is used to provide reactive power support for grid-based supply networks as well as for dynamic loads fed from standby generators. By installing a PQC-STATCON at Toyota Indus Motor Company, the power factor of the network increased from 0.85 to 0.95, thus enhancing power quality at the facility.

Fahad Iftikhar, Manager of IMC’s Projects Department says, “There have been notable benefits by installing ABB’s PQC-STATCON in our welding shop. We now operate only one 2250 kVA generator in the event of utility outages, leading to cost and environmental benefits. Resultant savings are up to US$ 300 per hour. There are also considerable improvements in welding quality owing to reduced voltage drops during power outage.” He also added that “Being the first of its kind in Pakistan, this project had many stringent prerequisites. It was successfully completed due to the strong commitment and dedication of the teams of ABB in India and Pakistan.”