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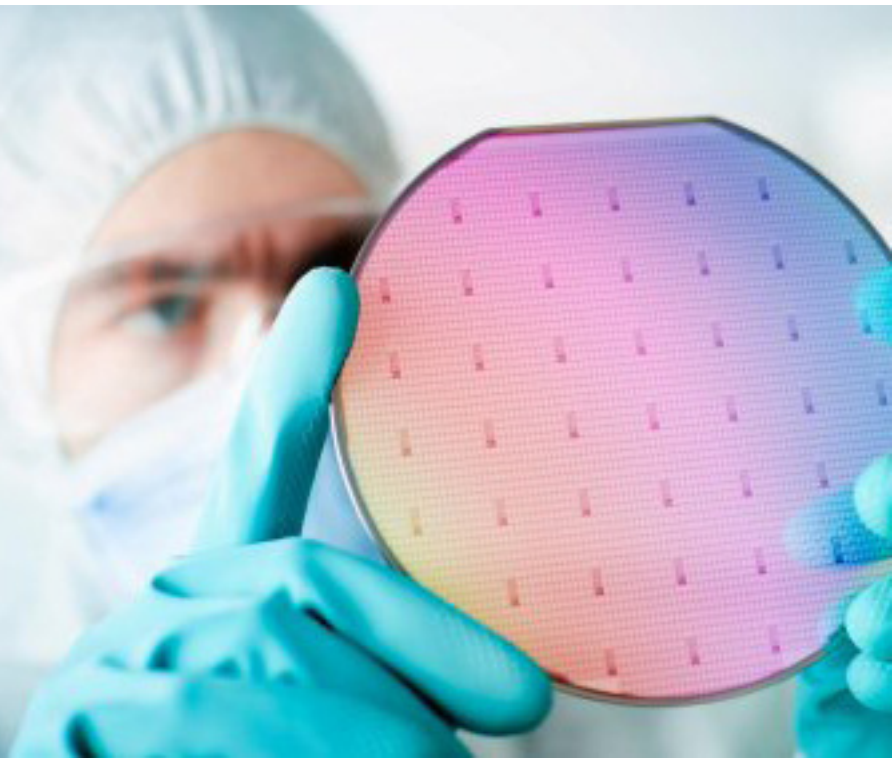
A success for ABB's PCS100 Active Voltage Conditioner (AVC)



ABB's power converter technology is making waves in the semiconductor industry. ASE Kaohsiung (Advanced Semiconductor Engineering) based in Nantze Kaohsiung, Taiwan, will use three PCS100 AVCs – a total power rating of 3600 kVA, to protect their chip assembly and testing equipment from power outages.

ABB's power protection solution

A high quality electrical supply is important in many industries, but for a world leader in semiconductor back-end solutions like ASE, it is a business requirement. Voltage sags were identified as the primary concern as power outages were very infrequent so the PCS100 AVC Active Voltage Conditioner was selected as the best solution. ASE sought high reliability, efficiency and small foot print along with fast and accurate voltage correction. By continuously monitoring the incoming supply and comparing it with perfect sinusoidal reference waveforms, voltage vectors can be created by the AVC using power electronics and injected in real time to provide a conditioned supply. ABB's PCS100 AVC can react within a few milliseconds provide an efficiency rate exceeding 98 percent, whilst providing continuous online regulation and voltage unbalance correction. ABB's PCS100 AVC has been widely applied in the semiconductor industry for process protection and achieved improved product yield and reduced waste.

Voltage sags have been identified in many international studies as one of the most costly power quality problems for continuous process industry. They are very difficult for the electricity utilities to eliminate from even the most robust power systems even at transmission connection levels. Typically caused by lightning and system faults, sags will propagate quite large distances through the electrical network causing sensitive loads to trip. For some customers this can just be a inconvenience, but for many it results in expensive product loss and downtime.

The PCS100 AVC modular design and unique small footprint make it a very compact robust option when installing in small confined areas like at ASE. Coupled with easy installation and maintenance, the PCS100 AVC is an ideal solution for plant protection. ASE is currently using two PCS100 AVCs on their Fab K15 production line. These AVCs were employed to protect ASE's assets from power sags and surges. One of the AVCs with a rating of 1800 kVA and 210 VAC, is providing 5000 Amps, making it the highest current rated AVC ever built.

Know-how technology

The PCS100 AVC does not include any super capacitors or batteries for energy storage, but instead takes energy from the remaining supply at unity power factor, with little impact. As voltage sags typically make up more than 90 percent of the problems that impact plant performance, the AVC provides a reliable, efficient and compact solution for industrial plant protection.

The PCS100 AVC contains a redundant bypass that ensures continuity of supply in the unlikely event that the AVC power electronics fail. This ensures very high levels of availability and

reliability. Some of the world's largest semiconductor manufacturers, with particularly high demands on plant availability, rely on this technology to protect their critical loads.

The PCS100 AVC ensures quick and full correction of three-phase voltage sags down to 70 percent of the nominal voltage and of single-phase voltage sags down to 55 percent of the nominal voltage. In the case of deeper voltage sags, it undertakes a partial correction, which will often prevent load shedding. In addition, all models are able to continuously correct voltage variations of ±10 percent in the mains voltage. This takes care of imbalances, which are a particular problem for direct online motors and variable speed motor drives.

Right place, right time
ASE Kaohsiung, the flagship company in ASE Group, possesses valuable expertise in product and process technology for the manufacturing of CSP, high frequency packages, MCM, flip chip and wafer bumping manufacturing. ASE is located in the Kaohsiung Nantze Export Processing Zone. This second science park for the region (first science park was Taichung Software Park – TSP), will provide high quality service and new achievements for software-based technology.

To find out more about ABB's power protection solutions:
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