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Providing power protection to Shanghai Huahong Grace Semiconductor Manufacturing Corporation



ABB has successfully installed two PCS100 Active Voltage Conditioners (PCS100 AVCs) to ensure HHGrace, a world-leading 8-inch foundry, to protect its semiconductor production line from potentially crippling power disruptions. This will enable HHGrace to produce a continuous supply of chips for their customers.

The semiconductor industry has one of the most sensitive processes. The process demands extremely clean air, water and electrical supplies. Without these necessities, extremely sensitive equipment can be damaged due to the disruption of voltage sags. This could potentially damage resources and materials wasted for each production line in the semiconductor process. ABB's PCS100 AVCs has a high efficiency rate exceeding 98 percent, making the units extremely reliable, giving HHGrace immunity from voltage sags that occur on the AC supply network.

For HHGrace, expansion of their plant was needed in order to cater to the growing demand of silicon chips to their customers. The tools and processes needed to produce the silicon chips such as dry and wet etching, die preparation and packaging are sensitive to voltage sags that are caused by external environmental factors. A

maintenance free reliable solution was required to protect these critical loads, with sag correction performance accompanied by local service. ABB was not only able to provide local support but was able to deliver and install a power protection solution that could withstand and correct the ongoing voltage sags that arose within the plant.

In the past ten years, HHGrace has experienced over 100 voltage sags in their plant. Since installation this year in May, the PCS100 AVCs has protected HHGrace against a power quality event, eliminating potential production shutdown and loss of materials and resources.

HHGrace commented on the PCS100 AVC technology and the features it provides, "the PCS100 AVC has some unique performance features such as continuous voltage regulation."

ABB has a proven track record in the semiconductor industry, providing solutions to some of the biggest semiconductor factories around the world. ABB's PCS100 Active Voltage Conditioner is a "battery free" solution to the most common utility problem, voltage sags, along with swell protection and continuous

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01 ABB's 300 kVA PCS100 AVC to ensure HHGrace is protected against power disruptions

voltage regulation. The PCS100 Reactive Power Conditioner is designed for correcting power factor, low order harmonics and imbalance issues often created by some semiconductor tool loads. The PCS100 RPC reduces system current thus enhancing energy efficiency and power system capacity.

The PCS100 UPS-I is tailored towards the demands of industrial applications such as sensitive tools, motors, drives etc. It also provides protection during deep sag and swell events, plus outages lasting between seconds and minutes depending on storage (super capacitors or batteries) and system loading. Payback time for a PCS100 UPS-I is typically less than 12 months as the problems it protects the plant from can be so expensive. The ultra-fast transfer time of less than 2 milliseconds, the exceptionally small footprint – 50 percent smaller than competing solutions, and the long and more economical operating life are also attractive features of the PCS100 UPS-I. For complete power protection of large sensitive and critical loads, ABB's PCS100 Medium Voltage UPS (PCS100 MV UPS) is the solution. The PCS100 MV UPS can be installed to protect the complete supply or just selected sensitive loads.

The modular and scalable architecture of ABB's PCS100 power protection portfolio enables compatibility between the systems, ensuring success in combatting common power protection challenges. Semiconductor companies can add ABB's power conditioning systems, such as the PCS100 Active Voltage Conditioner, UPS-I or the Reactive Power Conditioner to their existing plants although many companies choose to apply the products extensively on new FAB builds.



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HHGrace

Shanghai Huahong Grace Semiconductor Manufacturing Corporation ("HHGrace") is one of the world's leading 8-inch pure-play wafer foundries. With three 8-inch wafer fabrication facilities in Zhangjiang and Jinqiao of Shanghai, HHGrace offers production capacity over 124,000 8-inch wafers per month. With its headquarters located in Shanghai, China, HHGrace extends its sales and technical supports to customers in Taiwan, Japan, North America and Europe.

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

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