

Turnkey Engineering and Installation Services of Power Quality Products

Background

An example of S&C's total solutions approach can be seen in the turnkey installation of a 20-MVA PureWave UPS™ System and PureWave® Source-Transfer System at a semiconductor manufacturing facility in the Southwest.

This customer—an industry leader in microprocessors—was searching for ways to ensure reliable power for their \$2-billion facility expansion. The slightest power system disturbance, such as a voltage sag due to an upstream fault on the serving utility's system, could cause sensitive electronic equipment to drop off-line . . . ultimately leading to hundreds of thousands of dollars in scrapped product, equipment downtime, and personnel overtime.

Although the facility was served by two independent utility

power sources, conventional source-transfer switching equipment would be too slow to eliminate the effects of power quality problems. An S&C PureWave Source-Transfer System, utilizing power-electronic transfer switches, seemed to be a good fit for the application.

S&C's detailed applications analysis showed the best solution would be a combination of two S&C PureWave products: a PureWave Source-Transfer System and a PureWave UPS System, along with backup generators which would support the load through extended outages. Generally speaking, either a source-transfer system *or* an uninterruptible power supply system would be recommended for this type of application. Because of the extremely sensitive nature of the fabrication process, an additional degree of redundancy was desired.



S&C ELECTRIC COMPANY

Specialists in Electric Power Switching and Protection

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S&C Handled Everything

Since S&C was awarded the project on a turnkey basis, the first step was performing analytical studies to determine existing system conditions. These studies confirmed that the utility power sources could support the added load of the two PureWave Systems. Engineering and design of the overall system then commenced, along with managing the overall project.

Major work performed by S&C included:

- Project and contract management,
- Engineering calculations and studies, including fault current analysis, protective device coordination, load-transfer calculations, and transformer magnetizing-inrush current transient analysis,
- Creation of specifications for the installation, including a construction bill of material,
- Complete set of drawings including electrical, physical, and structural—documenting all facets of work,
- Permitting,
- Civil/structural engineering,
- Equipment layout and foundation plans,
- Medium-voltage duct bank routing design,
- Grounding system design,

- Development of a site safety plan,
- Daily on-site production meetings,
- Trenching and installation of medium-voltage cables,
- Excavation and construction of equipment pads,
- Design, manufacture, and installation of the PureWave Systems,
- Acceptance testing of the PureWave Systems,
- Start-up and commissioning, including a full range of system integration tests involving the PureWave Systems and standby generators,
- Training, and
- Long-term system maintenance.

Results

The engineering studies, design engineering, construction, installation, equipment testing, start-up, and commissioning were completed per the customer's tight schedule. S&C worked closely with the customer and the manufacturer of the standby generators to successfully integrate the generators into the system. The PureWave Systems now assure delivery of reliable electrical service, free of voltage fluctuations and sags. And S&C's Power Systems Services continues to serve the customer by remotely monitoring the system and performing annual maintenance visits.

