



3VL circuit breakers protect tap-off units up to 1,250A. An LD busbar trunking system enables hot swapping

Busbar trunking system used in solar cell production

Power to the fab

Deutsche Solar AG, one of the world's largest producers of mono- and multicrystalline silicon wafers for photovoltaics, recently built a new production facility at its Freiberg site to increase production capacity. A busbar trunking system offering many advantages over conventional cable-based systems handles the supply of the plant's power-intensive processes.

The extensive expansion of the production facilities at Deutsche Solar in Freiberg, located in the German state of Saxony, comes in response to the rapidly growing market for solar cells. Construction of the new production building for silicon used in solar cells on the outskirts of the city of Freiberg got underway in mid 2004.

The main low-voltage distribution system as well as the five transformers, each supplying 5,000A to the 400V network, are not located on the ground floor of the new production building, but rather one level higher than the actual production facilities. The electrical connection between the transformers and the main low-voltage distribution system is handled by an LD busbar trunking system. The system covers the current range from 1,100A to 5,000A

at a cross section of only 24 x 18cm. The busbar systems are available in standard lengths of 1.60m, 2.40m and 3.20m, but also in precise centimeter-specific lengths for configurations of over 50cm. This important system feature enables optimum adaptation to existing building conditions.

Hot swapping

LD busbar trunking systems allow for hot plugging and unplugging of tap-off units up to 1,250A. Connected consumers need simply be switched off.

3VL series circuit breakers handle short-circuit and overload protection of the individual tap-off units from 800 to 1,250A. To protect consumers with lower current loads of 125A to 400A, the tap-off units are equipped with fuse switch disconnectors with integrated Sitor fuses.

Maintenance-free connections

The various tap-off units are connected with the help of single-bolt joints. This type of connection features very low transfer resistance, and is also maintenance-free. Appropriate cup springs ensure that the single-bolt joints are always pressed onto the individual busbar connections with the assembly torque of 80Nm after installation. Continuous contact resistance plays an extremely important role particularly for large busbar systems. Additional advantages are evident in the high-level short-circuit resistance, much higher than that of cables, as well as in the fire load, which is considerably lower in busbar systems than in cables.

Integrated design

The integrated design of the busbars, feeders and cross-section modules helped to facilitate planning and installation at the Deutsche Solar production plant. The special connection technology created secure connections with low transfer resistance even at high currents, which are also maintenance-free. Thanks to their compact dimensions, their length flexibility, as well as their cross-section options in three axes, the busbar systems enable tailored adaptation to existing building conditions. This naturally also applies to any extensions and modifications of existing systems. ■

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