ELMA
Your Solution Partner

Integrated VPX-based High-Voltage DC Power Sub-System

POWER DISTRIBUTION - WIND ENERGY

Requirements

A UK customer came to us with the need for a challenging high-voltage DC power control sub-system to enable the transmission of power generated by their off-shore wind farms to an offshore link to their power distribution facility. Elma delivered a real time controller system based on the VPX computing architecture with multiple boards running the real-time operating system (RTOS) VxWorks. The control sub-system can also be used in a variety of other applications.

Solution

Housed in a 4U 19" rackmount platform, the 7-slot 3U high performance VPX backplane provides the interconnect between the system processor and the DSP, FPGA and switch cards required this system implementation. The high performance Intel 2.8GHz Xeon® processor runs on the VxWorks real-time operating system, with 16GB of memory and 64GB NAND flash. External interfaces are implemented with fibre optic links to ensure isolation is maintained from other equipment within the overall system. Multiple power supply modules ensure reliable redundancy. The design allows for versions tailored to rugged environments to withstand shock and vibration as well as extended temperature operation.

Temperature, fan and chassis monitoring is included through an integrated chassis manager with faults shown via LEDs on the front panel as well as being reported through Ethernet and serial interfaces.

The design can be easily customised to suit individual customer requirements, and is always performed as part of overall system design to ensure the best EMC and thermal performance of the complete system.

Benefits

The customer came to Elma for our technical expertise in packaging and embedded computing, as well as the ability to pull together a solution based on elements from multiple vendors. Elma's solution was less than half the footprint of the previous generation system and provides the customer with a significant advantage over their competitors.

High-Voltage DC Control Sub-System

Feature Highlights

- 7-Slot VPX backplane with fiber optic interfaces & rear transition IO
- Intel Xeon® 2.8 GHz processor
- PCIe and Ethernet Fabric Switch
- Gigabit Ethernet with dual SFP
- DSP and FPGA cards
- Plug-in VITA 62 PSUs
- VITA 46.11 chassis manager
- Temperature sensors
- Dual mains inputs & input power filtering
- Cooling via removable fan tray