

Control cabinet IPC ensures reliable operation under rough environmental conditions

Fail-safe marine communication system on schooner "Thor Heyerdahl" leverages PC-based control



Even after six years of daily use in salty sea air, the C6320 IPC continues to operate failure-free, despite some heavily corroded USB ports.



The schooner "Thor Heyerdahl" uses Industrial PC technology from Beckhoff for reliable on-board communication systems, always maintaining contact with other ships and the mainland.

Having functioning marine communication and navigation systems is critical on the high seas. The fact that these systems must withstand extreme environmental conditions such as aggressive saltwater, high humidity, and massive temperature fluctuations, to name just a few, poses an especially difficult challenge. Nevertheless, for many years now a Beckhoff control cabinet Industrial PC (IPC) on the schooner "Thor Heyerdahl" has performed reliably, putting an end to the dangerous threat of a communication failure.



Six-and-a-half months, 12,000 nautical miles, and 34 students are some of the key numbers to note when the 50-meter-long motor-powered sailing vessel "Thor Heyerdahl" embarks on its annual voyage under the motto "Classroom under Sail". The ship, moored when not at sea in Kiel, Germany, also makes shorter trips in the North Sea and the Baltic. The operator of the 75-year-old schooner with its volunteer crew is the "Segelschiff Thor Heyerdahl gemeinnützige Fördergesellschaft mbH" (Sailing Ship Thor Heyerdahl Non-Profit Support Association Ltd.), Kiel, Germany.

Industrial PC as safety-critical equipment

Temperatures ranging from the freezing point to 50 degrees Celsius (122 degrees Fahrenheit), relative humidity of up to 90 percent, fine dust, and aggressive saltwater are tough not only on the crew, but also on the installed electronic equipment. Mario Bregulla, who is in charge of the technical equipment on board, remembers: "Until 2009, we used off-the-shelf consumer PCs for the ship's communication systems. They lasted for about two years, after which they became completely unusable. Some of the laptop displays actually corroded internally. That's when we installed two Beckhoff C6320 control cabinet IPCs, with one functioning as a backup. Their most important feature is their reliability, and the integrated uninterruptible power supply provides additional safety against failures."

Since 2012, each ship must have an Electronic Chart Display and Information System (ECDIS), powered by a suitable computer. On the Thor Heyerdahl, this job has been performed by a C6320 Industrial PC, which will be replaced this fall by a C6920 control cabinet IPC as part of a general upgrade project. The new model delivers increased performance while taking up less space, and its interfaces are still compatible, which means a quick and easy upgrade process. The new control cabinet IPC will provide robust and reliable hardware for the navigation and information system, which handles a wide range of alphanumeric data such as planning and navigation data, in addition to digital ocean charts. Besides delivering status data and using GPS to display the ship's position, it is capable of recognizing dangerous situations.

Planned waypoints and routes provide the foundation for guiding the ship to its destinations. "In the English Channel, for example, you may have up to 200 ships at the same time, and you obviously don't want to collide with any of them," says Mario Bregulla. "Besides collecting and providing all the technical data, the Industrial PC also handles all the communication with the mainland."

Further information:

www.thor-heyerdahl.de

www.beckhoff.com/IPC