PAC onboard for historic piloted return to depths of the Mariana Trench

Opto 22 provides primary control system and key expertise for James Cameron's solo descent to Challenger Deep as part of the National Geographic DEEPSEA CHALLENGE Expedition.

Temecula, CA - April 5, 2012 - Industrial controls manufacturer Opto 22 played a central role in the reliable operation of filmmaker and National Geographic Explorer-in-Residence James Cameron's technologically advanced prototype submersible DEEPSEA CHALLENGER. Cameron recently piloted the submersible in a successful descent of almost 7 miles (11 km) to the "Challenger Deep," the deepest point in the world's oceans. Cameron's descent was part of the DEEPSEA CHALLENGE expedition, a joint scientific expedition by James Cameron, National Geographic and Rolex to conduct deep-ocean research and exploration to learn more about the biology and geology of the deepest point on Earth.

Aboard the DEEPSEA CHALLENGER, Opto 22's SNAP PAC System-a computer-based, programmable automation control system-acts as a central controller that manages more than 180 interconnected onboard systems, including sensors, batteries, thrusters, life support, lighting, and 3D cameras. The SNAP PAC System additionally records depth, temperature, pressure, battery status, and other vital data from the submersible, periodically transmitting the information to a support vessel on the surface. Precise data was essential for control and telemetry, and Project Manager David Wotherspoon with submersible builder Acheron Project Pty. Ltd. thought the Opto 22 system met this requirement well. "I was supremely confident the data being processed and released through the Opto 22 SNAP PAC System was accurate," Wotherspoon said, "and that it provided a stable control platform."

The SNAP PAC System's core ability to communicate with all onboard sub-systems eliminated the need for signal converters and extra hardware, reducing complexity and increasing reliability. Since most electronic systems and the submersible's human pilot occupy a cramped 43-in. (109 cm) diameter pilot sphere, these communications capabilities-as well as the compact size of SNAP PAC System components-saved much-needed space.

Like many systems used in the DEEPSEA CHALLENGER, the SNAP PAC System components selected by the submersible builder are off-the-shelf, commercially available products. The programmable SNAP PAC System can be configured for use in diverse industries and applications. It is used, for example, to control all brewing processes for popular U.S. brewery New Belgium Brewing, and to maintain water temperature, pH, salinity, and other water conditions at the multi-million-gallon Georgia Aquarium.

Cameron's solo dive to the greatest depths of the ocean was backed by a team of engineers, scientists, educators, and journalists. Opto 22 provided an on-site technical liaison, Application Engineer Benjamin Orchard, who worked with submersible builder Acheron Project Pty. Ltd. in Sydney, Australia-and later aboard the Mermaid Sapphire support vessel-to integrate the SNAP PAC System into the DEEPSEA CHALLENGER. In addition, a team of programmers and electrical engineers at Opto 22 headquarters in Temecula, CA, helped with custom programming, system design, and troubleshooting. "The Opto 22 SNAP PAC System and on-site integration support by Ben Orchard," said Wotherspoon, "provided an

advanced submersible with a control system that performed above my expectations."

For more information, contact Opto 22 headquarters at +1-951-695-3000 or visit www.opto22.com [1]

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