

Underwater Positioning Systems and Transponders



Kongsberg Maritime has launched during OTC a new range of acoustic underwater positioning systems and transponders, designed to harness the power of 'Cymbal' signal processing protocol whilst also being backwards compatible with the HPR 400 protocol and analog transponders. Other systems on display at OTC include HiPAP 501/451/351/351P, which are the second generation acoustic underwater positioning system offering improved position accuracy, longer range capability and faster data telemetry.

The new cNODE series of transponders consists of three models: Maxi - a full size transponder with large battery capacity, floating collar and release mechanism, and long life operation, designed primarily for seabed deployment. Midi - a short transponder with good battery capacity perfectly suited for subsea construction work and Mini - a small transponder for ROV/AUV mounting and subsea construction work. cPAP, a new compact subsea transceiver, designed for ROV positioning is also part of the new transponder family.

cNODE transponders feature full acoustic telemetry links and can operate with both Cymbal and HPR400 acoustics so vessels not using the new Cymbal protocol can still benefit from the performance of the new transponders. Because cNODE transponders are modeless, they can operate on both SSBL and LBL positioning without changing the mode of the transponder.

All cNODE transponders have aluminium housing and 4000m depth rating as standard. They feature a modular design based on standard housings (a steel transponder housing for special operation is available) that may have various add-on modules attached, including different transducers (from omni to very narrow beam width), remote transducer, different internal sensors (inclinator, depth, sound velocity), interface for external sensors and release mechanisms. A Transponder Test and Configuration unit (TTC cNODE), for acoustic test on deck, configuration and software download is also available.

The new, Kongsberg Maritime developed Cymbal acoustic protocol used by cNODE and the second generation HiPAP family is designed for accurate positioning of subsea transponders in SSBL/LBL mode and data communication with subsea transponders, and BOP control systems. It utilises Direct Sequence Spread Spectrum (DSSS) signals for positioning and variable speed data communication, and can be adapted to the acoustic communication conditions; noise and multi-path.

The Cymbal protocol provides new characteristics for both positioning and data communication, including: Improved range capability and accuracy to 0.01m, reduced impact from noise, directional measurements for more robust positioning, expanded power management for greater battery lifetime, variable data rate to secure longer range and highly reliable communication, and integrated navigation and data link that sends critical data between the positioning signals.