Seatools Equips Boskalis with Plough Position Monitoring Buoy

On behalf of its client Boskalis, subsea technology company Seatools completed the development, manufacturing and testing of a plough position monitoring buoy. After successful sea trials, the buoy is now being deployed for a subsea cable route clearance project, where the buoy has been fitted onto a subsea plough.

Whereas USBL is the conventional way to determine the position of subsea vehicles, this acoustic method fails to function properly for towed vehicles that operate in shallow waters with much ambient noise, such as thruster wash. Looking for a solution that meets the strict requirements for following and registering the defined cable track, Boskalis developed a buoy-based monitoring method that monitors the position of its subsea ploughs and boulder clearance tools.

The buoy monitoring system is based on fairly simple and effective principles. The monitoring buoy is connected to the towed vehicle by means of a steel cable. As soon as the vehicle is placed on the seafloor, the buoy is floated. By combining multiple, real-time data, including winch paid out wire length measurement Rovins data and DGPS data, the position of the plough can be accurately determined in all three dimensions. The buoy features an integrated subsea winch system whereby it can be fully retracted when launching and recovering the towed vehicle.

Hydrodynamic Behaviour

The innovative subsea monitoring system is the result of a powerful partnership between Boskalis and Seatools. While Boskalis was responsible for the fundamental concept and operational procedures, Seatools brought the concept alive. More specifically, Seatools was responsible for concept engineering and detailed engineering, as well as the manufacturing and factory testing of the positioning buoy.

Both companies brought specialist knowledge to the table, which made it possible to successfully realize this highly complex product. For instance, Boskalis' Maritime Dynamic department and Seatools' Mechanical Design department collaborated closely on predicting and adjusting the desired hydrodynamic behaviour of the eight-metre high buoy. Using hydrodynamic simulations, the behaviour of the buoy was simulated under even the most testing of weather and operational conditions, including the launch and recovery from the subsea vehicle.

Seatools managing director Jan Frumau is extremely pleased with the successful completion of the project: "As a market leader in subsea metrology systems, we are committed to delivering innovative solutions that solve industry challenges, such as plough position monitoring. In close cooperation with Boskalis, we realized a really unique piece of high-tech subsea equipment. We strongly believe in the added value of such a collaboration, where clients bring in a concept or core technology and ask Seatools to bring the concept to life."