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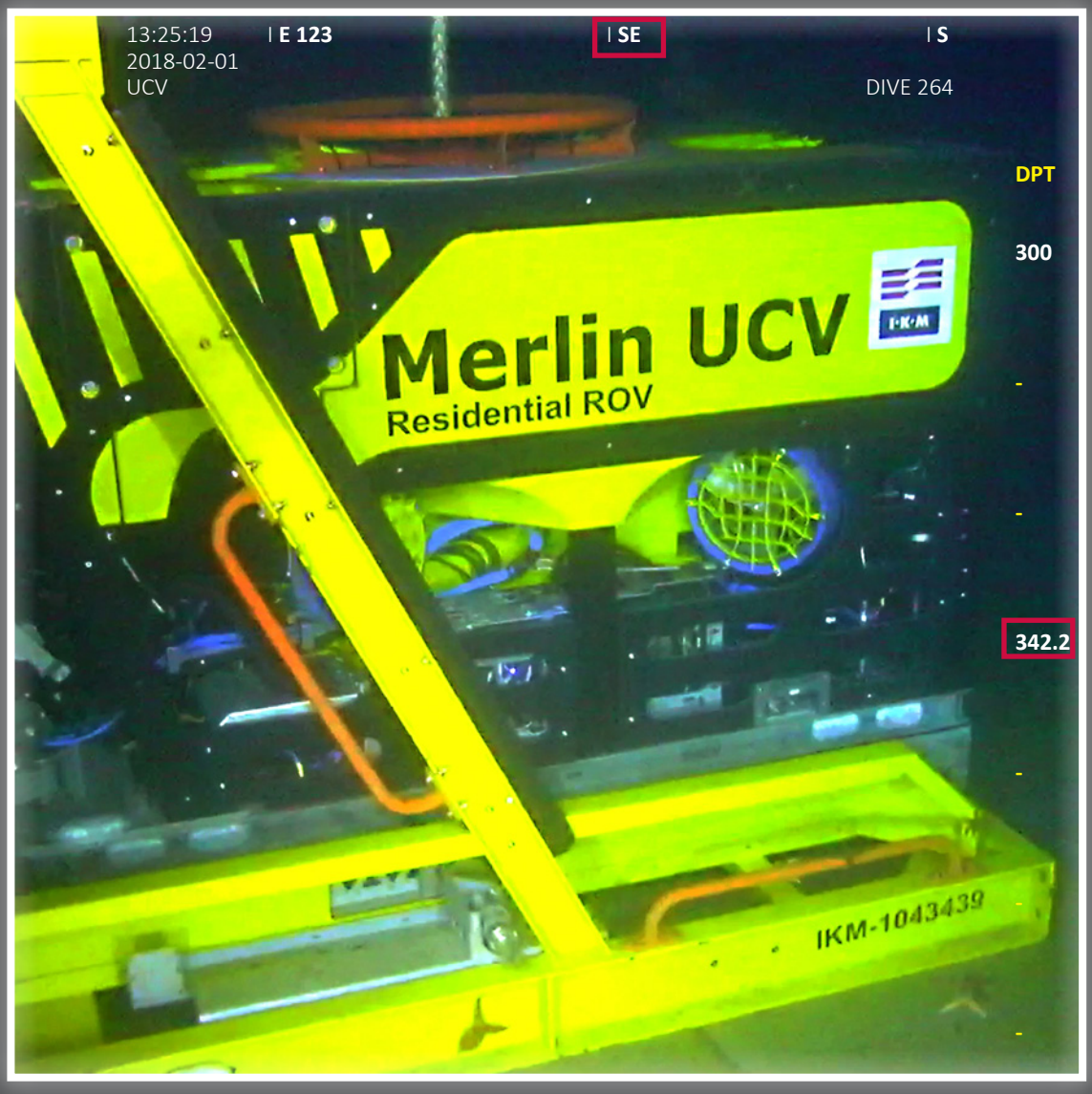


Society for Underwater Technology

Residential ROVs
Risers

ROV Control

iXblue Rovins Nano chosen by CRIS for OceanRINGS

The University of Limerick's Centre for Robotics & Intelligent Systems has completed integration and testing of iXblue Rovins Nano coupled to a Nortek DVL in their OceanRINGS ROV control system.

Providing full DP control of their newest small electric work class ROV Áed, OceanRINGS is a web connected ROV control framework bringing fault tolerant DP to even small observation class vehicles.

iXblue Rovins Nano, the smallest and lightest of the iXblue range of underwater inertial navigation products dedicated to ROV navigation, has recently been chosen by the Centre for Robotics & Intelligent Systems (CRIS) in Limerick, Ireland, for the development of a new INS based navigation & control suite, OceanRINGS. Part of a larger institution known as MaREI, CRIS aims to research the use of smart automated ROVs for challenging marine applications.

Prof Daniel Toal, Director of CRIS said "We have experience using PHINS for many years on our larger Observation class vehicle ROV Latis and this INS, coupled with the development of our OceanRINGS control suite, gives us our full 6 degree of freedom precision navigation and DP sub-sea with thruster fault tolerance and accommodation. For our newest smaller ROV Áed we have chosen Rovins Nano as a smaller, more compact precision navigation system ideal for our precision flight control needs."

iXblue's Rovins Nano has been especially designed to suit the challenging needs of ROVs experts performing subsea operations

Providing heading, attitude, and positioning data, Rovins Nano, coupled with the Doppler Velocity Log from Nortek, ensures accurate positioning of the ROV (with a drift of 0.2% of the travelled distance) and can go to depths reaching 4000m. With a true north heading accuracy of 0.15 degree secant latitude, iXblue's Rovins Nano offers unrivalled accuracy for its size and cost.

iXblue Rovins Nano is used by CRIS as part of the vehicle control system to provide some of the most advanced dynamic positioning capabilities available today. By current practice, ROVs are flown using camera (and sonar) feedback from scene to pilots for remote manual control with simple track-line displays, having pilots react to disturbances rather than anticipating them.

There is little automatic control other than auto-depth and station-keep with Doppler velocity log, and ROV operations are dependent on highly skilled pilots in areas affected by significant disturbances from currents or waves (e.g. inspecting chains and risers, wave energy devices or fish cages). While Oil & Gas ROVs do not generally operate in the top 20m splash zone, the latter is particularly called for in the emerging sectors of offshore wind, marine renewable wave and tidal energy as well as offshore aquaculture.

Moving to higher levels of ROVs autonomy will enable faster response time to disturbances, as well as higher accuracy in navigation and control over that of a manual pilot. This will, in turn, allow for operators to maintain safety in higher sea and tidal states while also extending operational weather windows.

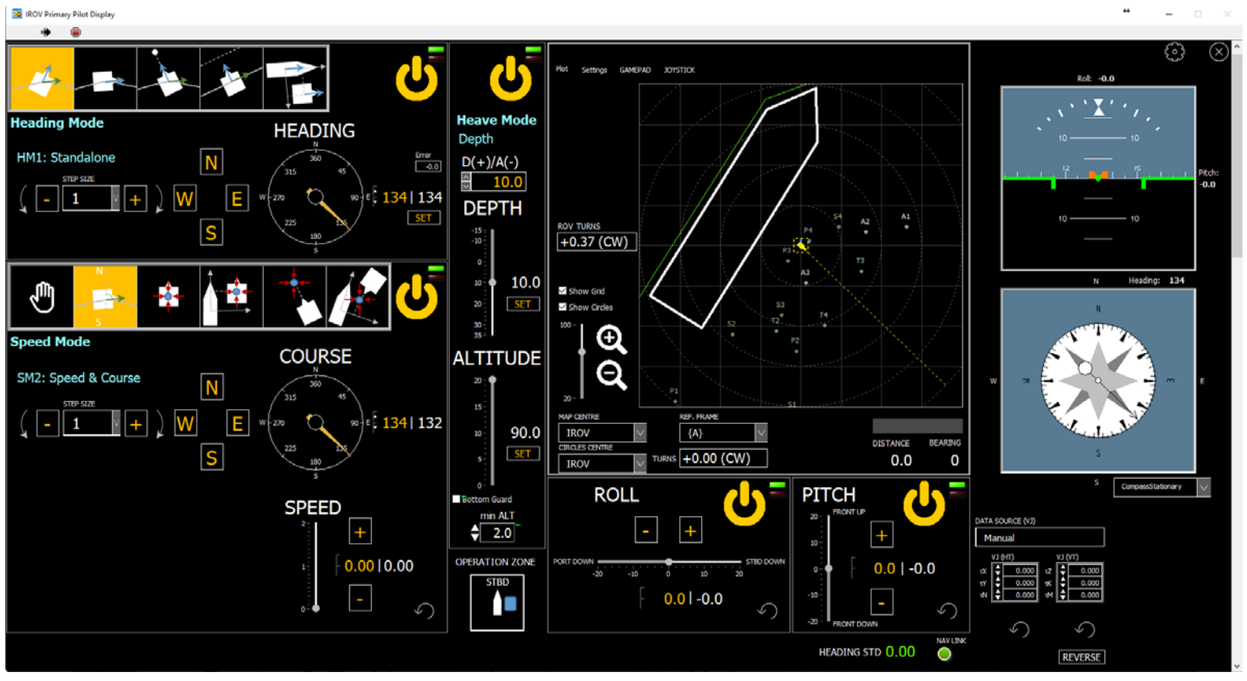
The CRIS teams have thus been focused on ROVs automation and have been working on both light work-class ROVs and small electric inspection vehicles, recently designing and building a 300msw survey-class ROV, known as Áed. Having undergone initial trials in wave & tidal test tanks in MaREI, as well as low sea states, the Áed ROV operational capacity has already been proven. CRIS also trialled a Thruster Fault-tolerant system which, using the onboard INS system, monitors errors in course and heading to detect thruster faults.

"The Áed ROV was designed with a focus on thrust-to-drag ratios, using CFD analysis of frame and thruster control optimization to allow for high-fidelity and stability." Explains Dr Gerard Dooly, Research Fellow at CRIS.

"The navigation suite was one of the most critical factors and the use of iXblue Rovins Nano, coupled to a Nortek DVL, allowed us to achieve high precision subsea navigation without having to compromise on the weight and size of the vehicle due to navigation payload."

Indeed, compact and light-weight, Rovins Nano allows for precious space savings onto ROVs and offers more responsiveness and flexibility during subsea operations, saving valuable vessel time and allowing for important productivity and costs reduction.

CRIS OceanRINGS system, with its Rovins Nano INS, offers both scientific and commercial operators with an effective INS based navigation & control suite for higher sea state operations, allowing for reduced operational time and requirement of skilled pilots while offering improved safety and extending operational weather window.



Ocean RINGS Control & Navigation Suite