Sonardyne Motion Sensor Technology

Sonardyne International has launched a new marine Attitude Heading and Reference System (AHRS): Lodestar. Lodestar has been developed to overcome the problems associated with conventional sensor platforms.

The Lodestar AHRS is a natural extension of the Sonardyne product range and has been developed for seamless integration with the companyâ€™s widely used LBL (Long BaseLine) and USBL (Ultra-Short BaseLine) acoustic positioning systems. It will also be welcomed by users with any requirement for motion compensation to support operations in any sea conditions. These are likely to include platform stabilisation, dynamic positioning, buoy monitoring, subsea construction and towfish and ROV/AUV operations.

Available in surface of subsea configurations rated up to 7,000 metres, Lodestar is a solid state AHRS incorporating six sensing elements, three ring laser gyros (RLG) and three linear accelerometers. The unit has been designed to include features that have been identified as offering valuable benefits to users. These include: 4GB of internal memory, internal power from a back-up battery, an Ethernet interface to provide fast update rates and multiple output strings that makes it suitable for a wide range of applications.

The gyrocompass algorithm calculation developed by Sonardyne for Lodestar produces readings in real time for heading, roll and pitch of the unit/vessel. Because of the high precision of the sensing elements used in the unit, these values can produce a highly accurate solution for each rotation in the x, y and z-axis. Lodestar also provides a robust heave measurement solution by applying a heave algorithm to the vertical motion of the unit. Lodestar is consequently suitable for any application that requires the accurate measurement of heading, heave, roll and pitch in a dynamic marine environment. By combining a motion sensor and gyrocompass in the same unit, significant advantages can be gained in relation to system calibration as the heading and motion frame share a common internal alignment axis.

Lodestar is upgradeable to full Inertial Navigation System (INS) providing position, velocity, orientation and angular velocity at high update rates.

The heading capabilities of Lodestar include a follow-up speed of 500Â° per second and a settle time of around 5 minutes. Its roll and pitch performance includes a dynamic accuracy of <0.02Â° with a resolution of 0.01Â°. Heave measurements are accurate to within 5cm or 5 per cent, whichever is the greater.

The new Lodestar AHRS is being manufactured at Sonardyneâ€™s headquarters at Yateley and will benefit from the world-wide sales and support available from the companyâ€™s offices in Aberdeen, Houston, Singapore and Brasil.