



Benefits

- Tracking and recording of block position and orientation during placement and post lay with no additional sensors
- Real-time 3D underwater scene awareness for crane operator
- 24 x 7 operations irrespective of water visibility
- Increased rate of production
- Increased accuracy and confidence of block final resting position
- Increased diver safety and reduced reliance on divers for placement
- Real-time survey grade inspection of slope prior to and during placement

Real-time Monitoring and Recording During Breakwater Construction

The CodaOctopus® Construction Monitoring Software (CMS) is a comprehensive software tool that increases production rates and safety of breakwater construction projects by enhancing the usual Echoscope®'s proficiency to visualise blocks in poor visibility/light.

The software includes the ability to simplify block position placement, automatically track block position/orientation, and record position/orientation for easy project management. Combining this with the Echoscope®'s capability to perform detailed pre- and post-lay surveys results in the Echoscope® and CMS combination providing unrivalled breakwater construction capabilities.

The software includes advanced features which enable different types and sizes of block to be automatically tracked from the real-time 3D Echoscope® data. A 3D model of the berm design can be imported into the software for increased accuracy of placement and ease and speed of operation. The advanced features extend across the project enabling pre-lay survey of the berm and as-laid blocks, assisting real-time block placement and recording as laid position of each block for end-to-end management of the project.

The pre-lay target position can be imported into the software and a target bullseye for each planned block position created, giving the operator a clear easy to use guide to accurate planned, block position in XY and Z space.

The system is fully extensible and is currently certified for Accropode™, Accropode™ II and XBloc® construction blocks and variants of the system have been used on a large number of breakwater projects around the world. If required, the software can easily incorporate different types of breakwater construction block, giving the operator a single tool for complete management of the breakwater construction project.

Features

3D Automatic Tracking

The acoustic point cloud data of each block is recognised by the software, a 3D model of the block selected by the operator and the software automatically locks the model onto the point cloud data. The operator has a clear 3D model of the block to work from, enabling increased accuracy of block lay, as the operator can 'see' all sides of the block.

Real-time 3D Visualisation

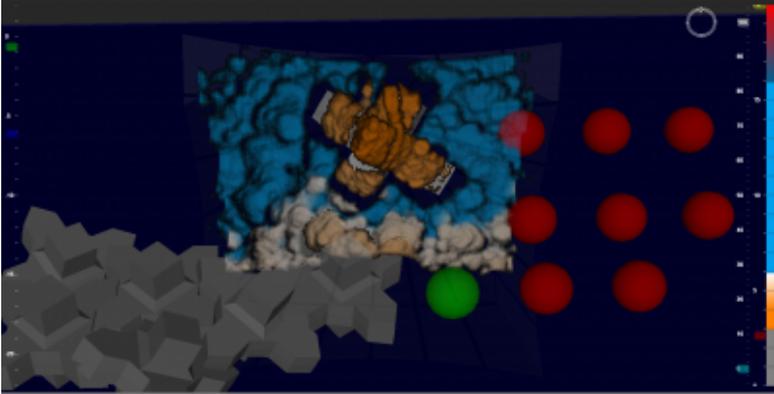
Real-time 3D visualisation of blocks and slope irrespective of water conditions for increased production, diver-less placement and pre/post-lay survey.

3D Automatic Recording

The unique model tracking technology means the final position and attitude can be recorded in the global CMS database. The tracking can be further activated on subsequent survey data allowing the master asset database to be quickly updated with any block-placement movement.

Integrated Pan & Tilt / Single Axis Rotator

CMS includes the option to control from the software the Coda Octopus Pan & Tilt or Single Axis Rotator. The operation of the IPT or ISAR can significantly extend the area which can be covered by the sonar, and improve the geometry for better imagery.



Eric Peeters of Van Oord says:

“Van Oord has been using the Echoscope real-time 3D imaging sonar on various projects from 2008 onwards where single-layer artificial armour units (ACCROPODE™ & ACCROPODE™ II) need to be placed. During placement, the Echoscope 3D imaging sonar provides real-time guidance to the crane operator. The Echoscope has contributed to an increased production efficiency whilst improving safety.

Over the last year Van Oord has taken part in the development of the CMS 2.0 software which provides, amongst other new features, enhanced ACCROPODE™ tracking functionality which makes it another leap forward to diver-less placement. By providing a test location in Constanta, Romania it was possible to feed the software developers instantly with new information. In addition, the new CMS 2.0 software has been used with the Coda Octopus 3D Integrated Pan and Tilt (IPT) unit.”

Van Oord operates around the world as a leading contractor for dredging, marine engineering and offshore energy projects (oil & gas and offshore wind).

Blair Cunningham, Coda Octopus President of Technology, says “[i]n developing our CMS 2.0 software we worked closely with Van Oord who own multiple Echoscope systems. This has given us real world feedback to enhance the capabilities of the software package and, more importantly, to address challenges that our customers face in these types of operations.”

Construction Workflow Management

CMS provides the capability to manage, monitor and document the entire construction phase of asset placement projects. Site design, pre-lay information, and data can be loaded into CMS (full X,Y,Z positions and rotations) for control, progress reporting and full-time visualisation of placed assets, including those being actively placed.

The workflow process allows multiple systems to operate simultaneously on a large site plan with recorded data being merged to provide a complete summary of pre-lay, post-lay and changes in position.

Past Projects and References

Accropode™ and Accropode™ II Projects

- Satah al-Razboot (UAE)
- Upper Zakum Field (UAE)
- Constanta (Romania) Ras
- Laffan (Qata)

XBloc® Projects

- Sumburgh (UK) Swinoujscie
- (Poland) Offshore Islands
- (Abu Dhabi) Dunkerque
- (France)
- Das Islands (Abu Dhabi)

Productivity Gains

- Satah al-Razboot, UAE - 8-9 blocks/hour (CLI data) Zadco
- Upper Zakum Field, UAE - 8-10 blocks/hour (CLI data) LNG
- Port Expansion - 10 blocks/hour (Van Oord/Boskalis data)

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