Cost effective inspection and structural maintenance for ship safety and environmental protection throughout its life cycle

Results in Brief

Maintaining the integrity of ship structures

European maritime experts have made advances in the development of a system offering a better inspection and maintenance system for double hull tankers. Project outcomes facilitate the collection, visualisation and communication of related measurement information critical to ship repairs.

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Ongoing efforts by the International Maritime Organization (IMO) to develop a condition assessment scheme (CAS) for double-hull tankers aim at making such vessels more environmentally friendly along their life cycle. This involves huge amounts of measurement information, the reporting on and analyses of which are very time consuming. As there is no standardisation of data, measurement information has until now been recorded manually on ship drawings or tables.

An EU-funded project, 'Cost effective inspection and structural maintenance for ship safety and environmental protection throughout its life cycle' (CAS), envisioned a

more efficient and user-friendly system, applicable to any ship type, but focused on tankers and bulk carriers. Innovative system features included development of a flexible ship electronic model refined to fit the needs of inspections, automatic updating of measurement information added to the ship model, integration of robotics, and immediate worldwide access to information.

The main objectives included integrating all phases of the ship life cycle to realise seamless communication between the onboard ship measurements and the use of structural condition assessment tools. Members also aimed to build a simplified 3D ship electronic model to which measurement and inspection information could be added. Ultimately, all work targeted an overall gain in efficiency of ship repairs and thus ship safety.

Project efforts succeeded in evolving a standard exchange database, the so-called 'Hull condition monitoring' (HCM), from which files could be generated by the CAS-developed 3D model generators. A risk-based inspection (RBI) methodology was advanced for adaptation to HCM and applied to a final demonstration, performed under realistic conditions in a European repair shipyard.

The demonstration proved it was possible to build a 3D model of the whole ship, representing areas to be measured with greater detail than the rest of the structure. Combined measurements entered into the HCM model were analysed using post-processing tools developed by project partners.

Project successes include the HCM standard and development of software tools. CAS results promise to open the way to improving the condition assessment process of ships in service, and as such support environmentally friendly operations targets for double-hull tankers.

Project Information

CAS

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Project website

Project closed

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