ISYS

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☐ **Key words**

Data management - Software engineering / development

☐ **Description**

ISYS is a Systems operability analysis tool developed to verify compliance with "Safe Return to Port" requirements, SOLAS II-2. Entering into force on July 2010, this new regulation, applied to large Passenger Vessels and highly occupied Special Purpose Ships, recognises adage that "A ship is its own best lifeboat".

The Safe-Return-to-Port regulations provide performance requirements for 'essential systems' that must be demonstrated to remain operational following fire and flooding damages that do not exceed a certain pre-defined "casualty threshold". ISYS can support the customer to apply the Safe Return to Port criterion correctly and efficiently by performing the overall and detailed systems analysis. ISYS enables the components and connections involved in complex and interrelated
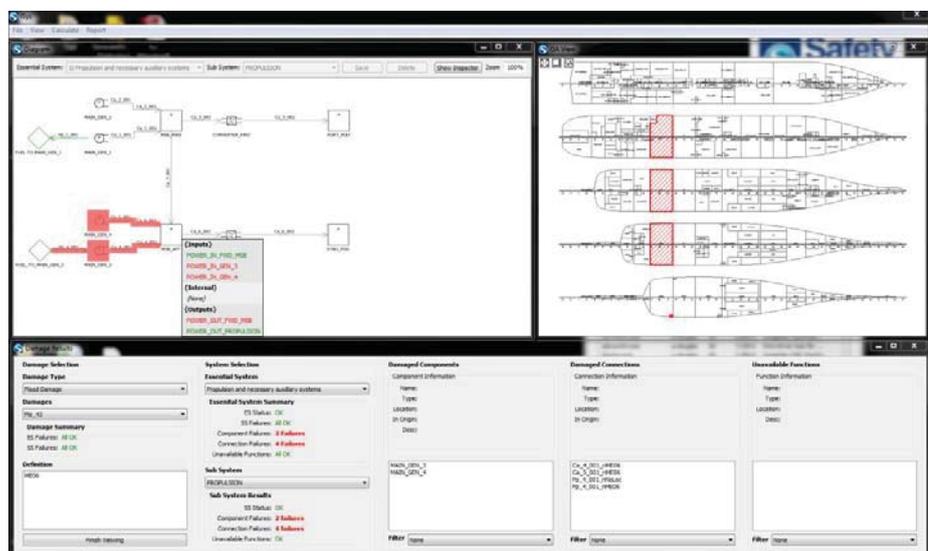
ship systems to be easily modelled. This is done within the geometric subdivision of the vessel by the use of logical expressions defining dependency. ISYS allows all of the IMO required essential systems to be modelled in a unique analysis frame, including the connections between systems. The damage scenarios required by the regulations are then input into the ISYS model and the availability of each of the essential systems is determined for each damage case. The system automatically generates reports for submission for approval and can also be used to create ship documentation for crew operating procedures.

ISYS is a software tool developed by SaS (Safety at Sea Ltd) to assess ship systems operability and vulnerability. The tool is aimed at concept/basic design of vessels where vital operating systems and safety-critical systems are typically assessed for reliability and vulnerability. At present, this type of analysis is required by SOLAS mainly for large passenger ships and is routinely undertaken for offshore vessels as part of the Formal Safety Assessment process.

Key features
- o Interactive GUI: Working environment integrates (1) watertight subdivision, (2) arrangement of fire compartmentation and (3) systems topological diagrams.
- o Efficient data management: The program runs on a SQL database which allows multiple users working on the same project and allows detailed tracking of changes and updates.
- o Assessment of both physical damage and impact on system functionality / operability.
- o Automatic report generation and documentation: customised for (i) design iterations, (ii) FMEA verification or (iii) statutory approval.

□ **Applicability of Technology to Maritime SMES**

Potential use in a variety of industries e.g. Marine renewable energy, Maritime Services, Oil and gas, Shipbuilding.