About SAFEDOR

SAFEDOR is an integrated project in the 6th framework programme of the European Commission (CEC). The topic of SAFEDOR is risk-based ship design and approval. The project started in Feb. 2005 and is planned to run for 4 years. The project volume is €20m with €12m funding by the European Commission. Under the coordination of Germanischer Lloyd, 52 organisations - representing all stakeholders of the maritime industry - participate.

What is risk-based ship design and approval?

The motivation to use risk-based approaches is mainly twofold: implement a design which cannot be approved today and / or optimise an existing design with respect to safety. Risk-based ship design is a new methodology that integrates probabilistic / risk-based approaches in the design process of individual ship designs and systems. Safety is considered as one additional design objective during the design process (alongside traditional objectives such as speed and cargo capacity). Risk is used as a measure to evaluate effectiveness of design changes (safety becomes measurable). Approving risk-based designed ships and their intended operation is called risk-based approval.

What is the relation to goal-based standards (GBS)?

SAFEDOR today is often associated with GBS although key differences exist. The IMO debate on GBS will result in a new regulatory framework which is then applicable to rule makers. GBS will be rules for rules. SAFEDOR focuses on individual ship design and the necessary regulatory framework to approve risk-based ships and systems. However, knowledge gained in SAFEDOR can also be used to create risk-based rules for ships and ship systems and to support the development of a safety-level approach to GBS.

What are the expected benefits for ship owners?

With risk-based approaches firmly established in the maritime industry, ship owners will be able to realise innovative ships and maritime transport solutions which cannot be approved today, relating to, e.g., new layouts challenging damage stability regulations or use of new materials and systems challenging current SOLAS regulations. Benefits can also be achieved through optimising safety of existing ship designs cost-effectively. In addition, with a novel approval process in place accounting for risk-based approaches, implementation of novel ships will be faster and more reliably. Eight prototype ships designs were created to validate the new method and document its practicability.

Example: The majority of new designs in cruise ships exploit the economies of scale that are achievable (in particular the significantly reduced costs per lower berth) in post-panamax sized ships. The increased size allows for designers to be innovative and for maximum utilisation of public spaces, and regulation 17 of SOLAS Ch II-2 provides a mechanism that allow innovative and alternative designs to be assessed and approved. However the advantages that are available to the designer and the solutions that might be chosen cannot always be maximised due to the constraints imposed by the 150 person capacity of lifeboats contained within the rules today. For a post-panamax vessel it is not possible to fully maximise commercial advantages as the length will have to be increased disproportionately to accommodate sufficient life saving capacity. If alternative solutions are available then considerable cost savings might be made by the reduction in numbers of boats and davits. By linking the survivability of a ship to the life saving appliance required, the safety level can be maintained or increased and it will be possible to reduce the number of cabins obstructed by life boats and maximise the number of balcony cabins. Such solutions can only be achieved if there is an alternative design and regulatory framework available.

To facilitate the above, ship owners and their consultants are expected to expand their expertise related to risk-based approaches. In particular, knowledge on risk assessment procedures is needed. Furthermore, cost-benefit analyses will be required as standard in early design.

Outlook, contact and more information

SAFEDOR has presented results of the first two years during the mid-term conference in early May. To find more information on SAFEDOR as well as a selection of public documents, please visit www.safedor.org. For direct contact, please email to the Chairman of the Steering Committee Pierre.Sames@gl-group.com.