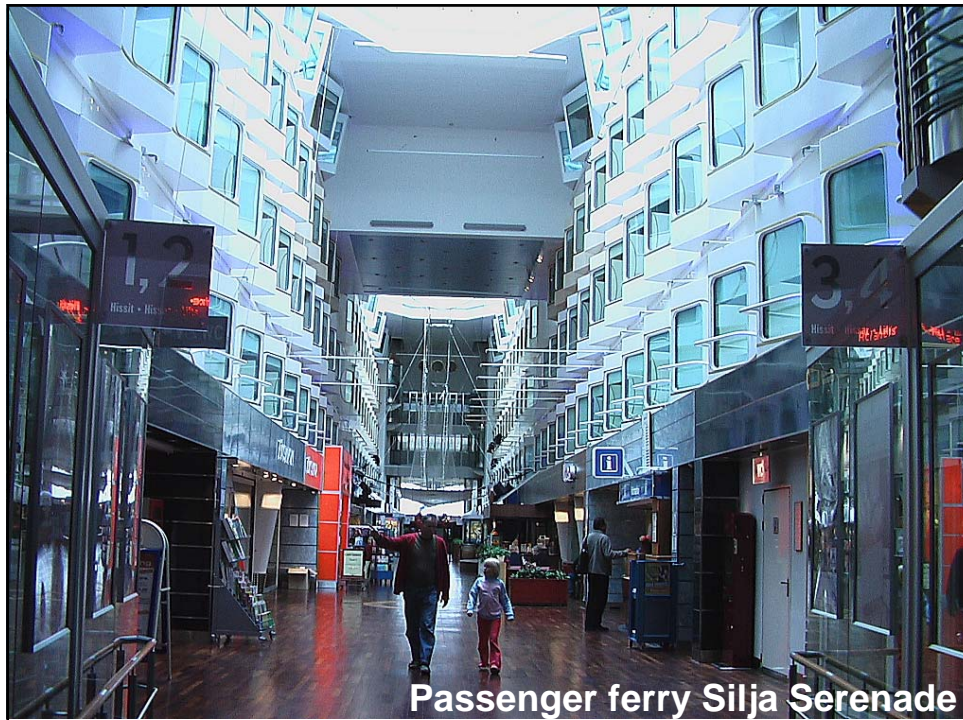


Open Workshop on Risk-Based Approaches in the Maritime Industry, Discussion First day

- Cost Benefit Analysis
 - GCAF, NCAF
 - How to accommodate issue of marine environment protection into CBA
 - Index=(Cost – Benefit) / Mitigation
 - Cost: Equipment, measures
 - Mitigation: Prevention of environmental pollution and loss of life
 - Benefit: Averting life, Reduction of pollution of environment
 - Uncertainty in Risk-based approach
- Definition of Risk in terms of time scale
- How to utilize the available technology into overall risk-based design of ships and rule making
- What is the motivation of Risk-based design?
 - What we can do at actual design stage?

Open Workshop on Risk-Based Approaches in the Maritime Industry, Discussion : Second day

Future of risk-based design and approval



Framework of New SOLAS Chapter II-2, 2000

- Clearly States Fire Safety Objectives
- Clearly States Fundamental Requirements
- Each Regulation indicates its functional requirements
- Give Evaluation methods for Alternative Design and Arrangements

Alternative Design and Arrangement for Fire Safety Contents of Regulation 17

1. Proposal stating which prescriptive requirements are not used;
2. Specifying fire safety performance and its criteria addressed by the prescriptive requirements concerned;
3. Detail of alternative design and arrangements, and the assumptions used in the design which may lead to operational restrictions on the ship such as limiting operation under certain condition; and
4. Proof that the alternative design and arrangements meet the required performance and criteria derived by .2.

MSC/Circ.1002 Guidelines for alternative design and arrangement for fire safety

Using established technology, such as ISO TR13387 or SFPE Engineering Guide may be used for this purpose.

Open Workshop on Risk-Based Approaches in the Maritime Industry

(1) Design of ships and their system, arrangement and equipment

- By rules
 - Most of SOLAS
 - Goal-based new ship construction for oil tankers and bulk carriers
 - IACS CSR

– Risk-based

SOLAS II-1, II-2 and III: Alternative design and arrangement

Example

- NGHP Carriers (Gas-tight bulk carrier)
- Techno-Super Liner (HSC with passenger cabins)
- Non-ballast water tankers and bulk carriers
- MOIV (mobile Offshore Island Villa including runway for aircraft)

(2) Establish Risk-based regulations

GBS: safety –level approach

What is necessary for Risk-Based Approaches in the Maritime Industry

- **Regulators**
 - are required to have ability of risk-based evaluation and approval
 - Safety evaluation office of Safety standard division of Maritime bureau of MLIT Japan
- **Designers/Shipbuilders**
 - are required to have ability and technology to design and to demonstrate the relevance
- **Research institutions**
 - are required to provide relevant technologies, tools and overall scope.

Workshop on the future of risk-based design and approval

- Practice risk-based design and approval in a uniform, transparent and predictable way
- Harmonise risk models to ensure consistent application of risk-based design
- Consider the accuracy of the results and provide an indication of the uncertainty
- Establish parametric models of concept ship designs to fully exploit optimisation potential
- Develop risk-based approval beyond safety equivalence
- Derive risk acceptance criteria for ship function and systems
- Ensure cost-effectiveness of risk-based design and approval with standardised solutions
- Ensure competitiveness of inventors with balancing re-usability and protection of intellectual property

Possibility of cooperation between SAFEDOR and Japan (NMRI, MLIT and Industries)



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