



## 2<sup>nd</sup> FibreShip Workshop

# Regulatory and Standardisation Strategy and Way ahead

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Main Objectives

**Regulatory and Standardisation - Strategy**

Development of the Performance criteria

Conclusions



## Objectives

Maximize the impact & acceptability of the technologies developed

Promote the widespread use and uptake of FRP as building material of large-length commercial ships.

## Undertaken through

- Engage with the relevant stakeholders (including shipyards, regulatory bodies) via suitable dissemination routes by all partners
- Develop Standards & Guidelines to maximize the impact in the industry.



## Explore Paper presentation in IMO in collaboration with EU RAMSSES related to

- Ship Design & Construction (SDC) 2020
- Ship Safety & Equipment (SSE) 2020

## Explore INFO Paper to IMO in collaboration and support with FLAG states and IACS?

- Possibly on IMO FTP code – Fire safety issues



## Paper Presentation (LR, BV, RINA & all)

- Explore Paper presentation in IMO in collaboration with EU RAMSSES related to
  - Ship Design & Construction (SDC) 2020
  - Ship Safety & Equipment (SSE) 2020

### Way Ahead:

- **In discussion with Mr Sascha Pistrom from IMO about lunch the time presentation to SDC7 2020.**
- **BV (Fibreship), CMT, NMTF (RAMSSES) had a meeting on 29<sup>th</sup> May 2019**
- **Combined project presentation related to structural aspects/composite ships aspects**



## INFO paper to IMO (LR, BV, RINA & all)

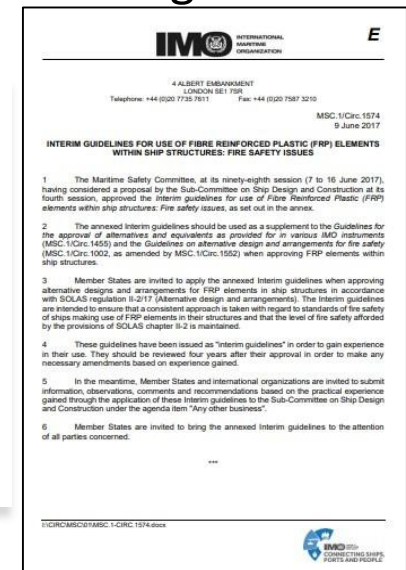
- Explore INFO Paper to IMO in collaboration with the support from FLAG states and IACS?

- Possibility for IMO FTP code – Fire safety issues

**“Interim guidelines for use of Fibre Reinforced Plastic (FRP) elements within ship structures: Fire safety issues (MSC 1574)”** issued June 17, not mandatory. Used as supplement for alternative design.

4 These guidelines have been issued as "interim guidelines" in order to gain experience in their use. They should be reviewed four years after their approval in order to make any necessary amendments based on experience gained.

5 In the meantime, Member States and international organizations are invited to submit information, observations, comments and recommendations based on the practical experience gained through the application of these Interim guidelines to the Sub-Committee on Ship Design and Construction under the agenda item "Any other business".

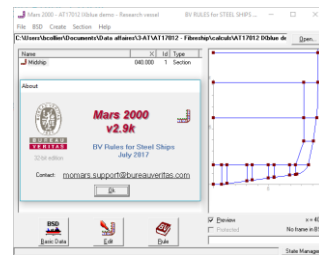
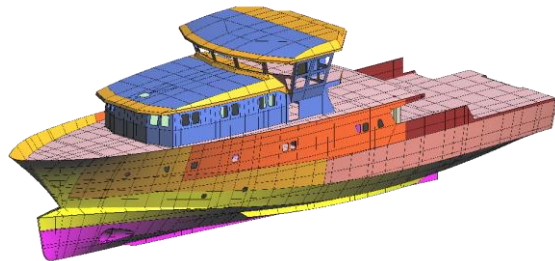


Way ahead: Review the possibility upon finalising the Performance criteria (Dec 2019)

# Development of the Performance criteria **Structure**

## Development of the Performance criteria – Structural Safety Issues

- Calculation Approach: Loads - Rule Based / Numerical (FE) approach
- Loads combination: Local / Global
- Fatigue assessment: S-N Curves, cumulative damage
- Joining: Adhesive bonding of composite and hybrid materials
- Structural continuity: Between primary hull girder and structure/  
primary and secondary stiffener





# Development of the Performance criteria

## Fire

## Development of the Performance criteria - Fire Safety issues

### Fire safety issues-SOLAS chapter 2 regulation II fire objectives & functional requirements

- ✓ Separation of main division into vertical and horizontal zones
- ✓ The separation of accommodation space
- ✓ The restrictive use of combustible materials
- ✓ The containment and restriction of any fire in the space of origin
- ✓ Protection of means of escape from the fire and access for fire fighting

Currently it is not possible to achieve SOLAS requirements using composite materials

### 2 strategies are being proposed regarding structural fire performance

- “Local equivalence” – Focus on deck/bulkhead fire resistance (ongoing)
- “Global equivalence” – Focus on the fire risk in a global approach on board



## Fire performance criteria

### ✓ Local equivalence

- Based on full understanding of SOLAS expectations for steel structures and deck/bulkheads fire ratings
- Highlight the methodology used for the definition of the current applicable criteria
- Most restrictive one: A-60 bulkhead/deck
- Why 60 minutes? Why 4mm thickness for the plating? Why such spacing between stiffeners? What would happen after 60min of ISO 834 fire? Etc.
- Will allow to consider a similar reflexion to build the composites fire performances expectations
  
- First tracks
  - SOLAS 1912: “incombustible bulkheads” concept to avoid a fire propagation outside of the compartment
  - SOLAS 1929: “fire resisting bulkheads”, “constructed of metal or other fire-resisting material, effective to prevent for one hour [...] the spread of fire [...]”
  - SOLAS 1948: first real chapter dedicated to fire protection, with A and B class bulkheads/decks concepts
  - Morro Castle: first “fireproof” vessel – fire in 1934 that burnt all the ship
  - What happened in between at IMO?



## Fire performance criteria

- ✓ Global equivalence
  - Consider the fire risk in a global approach (i.e. not space per space as in the local equivalence)
  - Based on generic risk models to be developed
  - One risk model for steel ships / One risk model for composite ships
  - Consideration of all possible safety systems (active, passive, on-board procedures, etc.)
  - Identification of common nodes / Identification of specific nodes
  - Developments of new measures/actions/criteria to be applied on specific nodes of the FRP risk model to reach an equivalent risk level
  
- ✓ Two complementary approaches: the local equivalence may be re-used on dedicated nodes of the global equivalence



## Possible Paper presentation in IMO

in collaboration with EU RAMSSES to Ship Design & Construction (SDC) 2020



## Possible INFO Paper to IMO

linked to 'Interim guidelines for use of Fibre Reinforced Plastic (FRP) elements within ship structures: Fire safety issues (MSC 1574)'  
in collaboration and support with FLAG states and IACS?



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