

Joint Branch of the RINA & IMarEST (Singapore)



Report of the Technical Subcommittee 2020

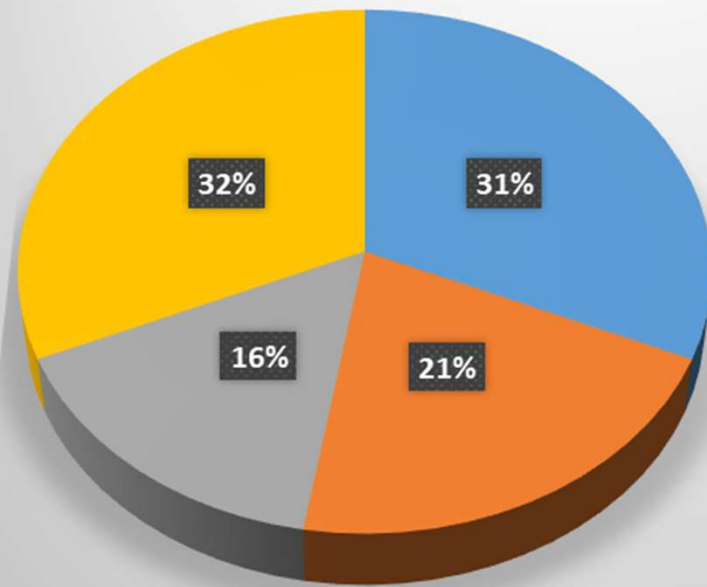
**Livio Deltin
Rick Houghton
Vimal Kumar**

Technical Talks and Webinars

Mainstream and new industry themes in marine safety, green technologies, ship&boat decarbonisation, offshore engineering and digital technologies

S/N	Date	Company	Speaker	Topic and type of event	Organiser	Attendees Signed / Registered Eventbrite (Attendance Rate)
1	1 Oct	NTU	Dr Liu Shukui	Prediction of the Added Resistance in Seaways for Better Ship Design and Operation (Talk)	JB-SNAMES-SMA	36 / 55 (65%)
2	14 Nov	RINa Singapore	Mario Moretti	IMO 2020 Sulphur Cap and Beyond (Talk)	JB-SNAMES-SMA	63 / 91 (69%)
3	23 Jan	Sembcorp Marine	Dr Joo Hock Ang	Transforming the Marine and Offshore Industry through Digitalization and Industry 4.0 (Talk)	SNAMES-JB-NGEE ANN POLYTECHNIC	46 / 90 (51%)
4	30 Apr	Singapore Institute of Technology	Dr Dimitrios Konovessis	Preliminary Design of a Tanker Ship in the Context of Collision-Induced Environmental-Risk-Based Ship Design (Webinar)	SNAMES-JB-SSA-SIT	46 / 111 (42%)
5	19 May	INMARSAT	Toh Keng Hoe	Digitalization and Innovation in the Maritime Industry (Webinar)	SNAMES-JB-SSA	89 / 153 (58%)
6	28 May	Sovitec Group	Choon Seng Tan	An overview of Fire Fighting Systems on board cargo vessels (Webinar)	SNAMES-JB-SSA	36 / 75 (48%)
7	18 Aug	AkzoNobel	Dr Chen Haoliang	Prediction and analysis of ship performance and fuel efficiency with a proper selection of fouling control coating (Webinar)	SNAMES-JB-SSA	32 / 85 (38%)
8	24 Sep	Fugro	Jennifer Hibbert	Tropical Storms – Risks and costs in offshore operations (Webinar)	JB-SNAMES-SSA	31 / 109 (28%)

Top Three Technical Events 2020



■ Tropical Storms - Risk and Costs in Offshore Operations by Jennifer Hibbert (24 September 2020)

■ Transforming the Marine and Offshore Industry through Digitalization and Industry 4.0 by Dr. Joo Hock Ang (23 January 2020)

■ Preliminary Design of a Tanker Ship in the Context of Collision-Induced Environmental-Risk-Based Ship Design by Dr. Dimitrios Konovessis (30 April 2020)

■ Others

93 members* called for a three-day voting session online

19 votes collected with a deadline

*members of RINA-IMarEST-SNAMES who signed the attendance register

Snapshots of some technical events in 2020

The collage features several technical presentations and a lecture hall scene. The top-left presentation, titled "Design Generation & Calculation Procedure" by SIT (Singapore Institute of Technology), outlines a workflow: Parametric Hull Model for Design Variant i (including L_{BP} , B, D, tank arrangement) leads to a Probabilistic Oil Outflow Model (Monte Carlo Simulation), which then leads to a Sample Collision Scenario Variables to Generate Collision Events (10 000). This process is constrained by Stability (Cargo Capacity, Calm water Resistance, Steel Weight) and Risk Metric (Expected Oil Outflow Volume). The final step is Design Space Exploration for Feasible Designs, subject to Constraints (Aspect ratios, damage stability, disp. = buoyancy, etc.). The optimization goals are: MIN risk of cargo loss, MIN steel weight, MIN calm water resistance, and MAX capacity. The top-right presentation, titled "1. Digital Design", shows a Design Data Creation process involving Digital design through 3D modelling, Design to production alignment, and Digital Twin. The bottom-left presentation, titled "Questions?", features an image of a satellite and the Inmarsat logo. The bottom-right presentation, titled "Type of vessels", shows four types of vessels: Chemical Tanker, LNG Tanker, Ro Ro, and Product Tanker, with the Survitec logo. The right side of the collage shows a lecture hall with a presenter and an audience, with a large screen displaying the "1. Digital Design" presentation.

Design Generation & Calculation Procedure

Parametric Hull Model for Design Variant i (L_{BP} , B, D, tank arrangement)

Stability

- Cargo Capacity
- Calm water Resistance
- Steel Weight

Probabilistic Oil Outflow Model (Monte Carlo Simulation)

Sample Collision Scenario Variables to Generate Collision Events (10 000)

Risk Metric (Expected Oil Outflow Volume)

Constraints (Aspect ratios, damage stability, disp. = buoyancy, etc.)

Design Space Exploration for Feasible Designs

Optimisation

- MIN risk of cargo loss
- MIN steel weight
- MIN calm water resistance
- MAX capacity

1. Digital Design

A. Design Data Creation

- Digital design through 3D modelling
- Design to production alignment
- Digital Twin

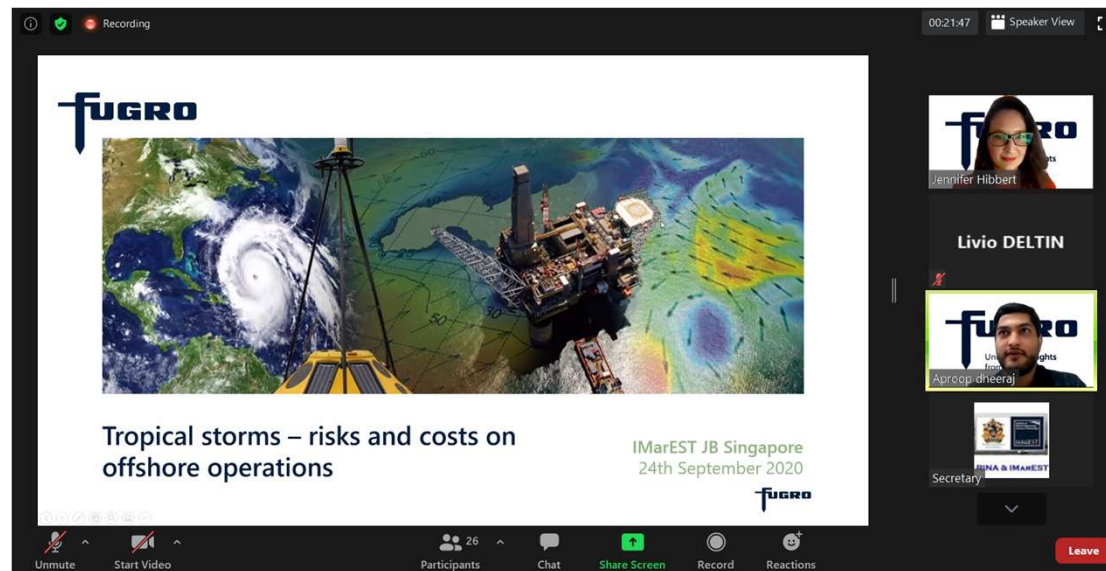
Questions?

Type of vessels

- Chemical Tanker
- LNG Tanker
- Ro Ro
- Product Tanker

The IMarEST Branch Certificate will be awarded to
Ms Jennifer Hibbert's presentation (24 September 2020)

“Tropical Storms – Risks and Costs in Offshore Operations”



Feedback gathered after any technical webinar

- Shipyard Operations and Industry 4.0
- Marine Education and Training for Skilling and Upskilling Competitive Manpower
- LNG as a Marine Fuel and Supply Chain (FLNG, carriers, FSRU, bunkering vessels)
- Marine Propulsion Systems
- Marine Equipment and Technology
- Offshore Technology
- Subsea Technology and Deep-Sea Mining
- Maritime Cybersecurity
- Maritime and Shipbuilding Heritage

Technical Events Plan in 2021

- Follow up feedback from the audience gathered in 2020
- Blend feedback with new themes in the industry:
 - marine renewable energy (coastal and offshore)
 - floating solutions (coastal and offshore)
 - riverine, harbour and coastal ships and boats decarbonisation
 - marine leisure boating and cruise industry as a healthy lifestyle in pandemics
 - latest classification rules and statutory regulations with specific insights on developments for new technologies