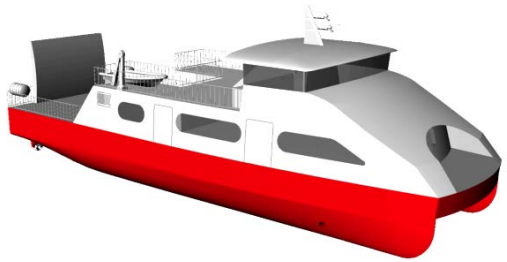
Tommy Hertzberg

Section manager SP Fire Research

SP Fire Research

SP Technical Research Institute of Sweden



Risks and regulations: an overview of composite use in maritime structure

Franz Evegren

SP Technical Research Institute of Sweden

RI. SE INSTITUTES

STENA F-Max, 2008-2009

Conversions two Ro-Pax Vessels; 2009

2009 TKMS AB worked with two project on conversion of two Ro-Pax Vessel with composite superstructures on the top level

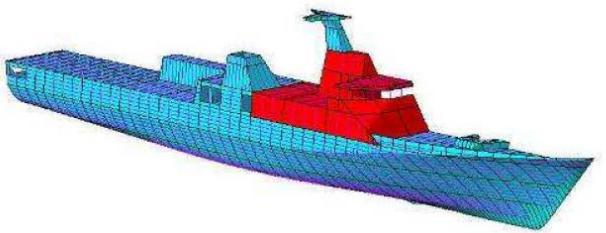
STENA BRITANNICA

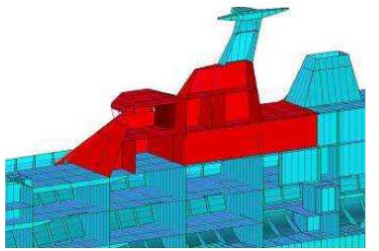
STENA HOLLANDICA

The Norwegian Gem, 2009-2013; Läss-C, BESST

BESST 2013

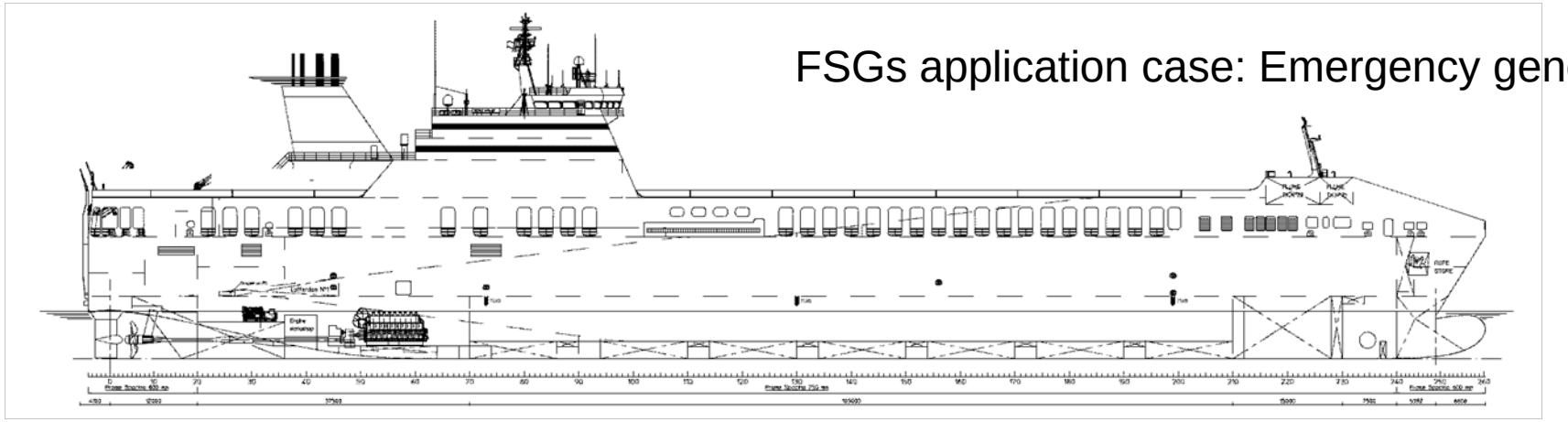
Damen application case: ”Yacht”

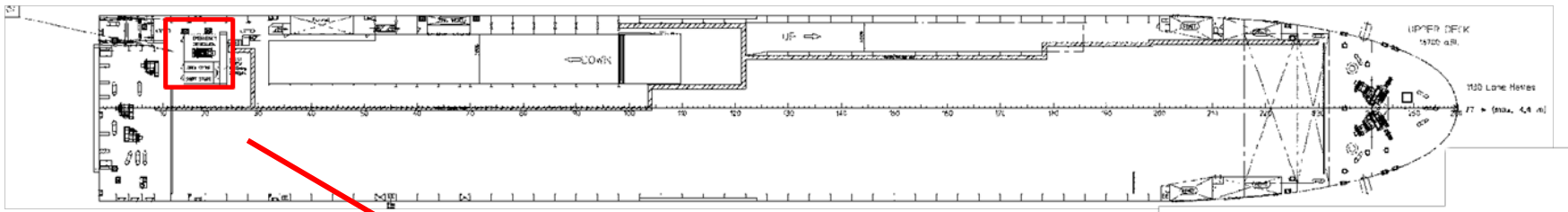


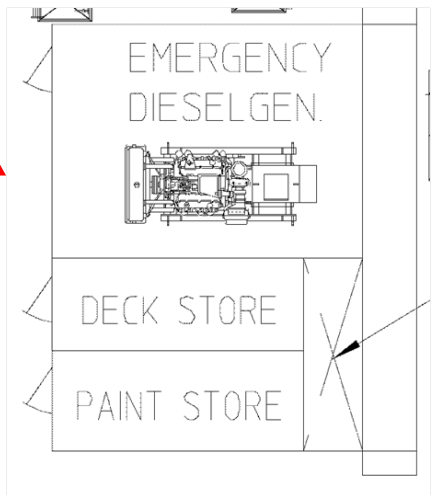


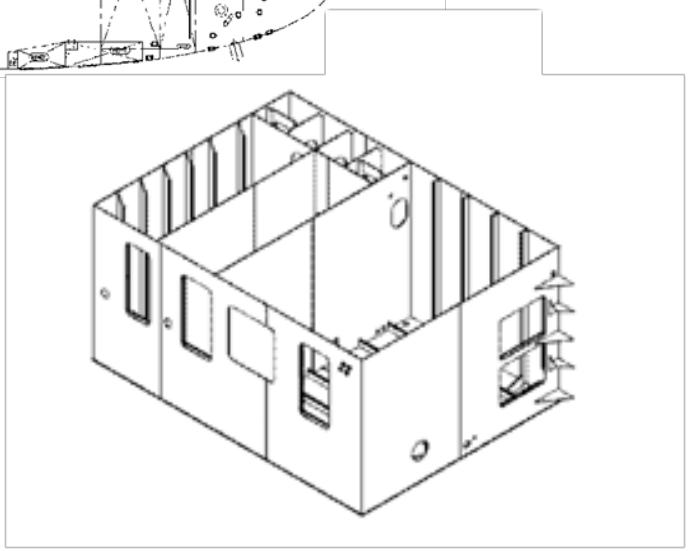
BESST 2013

FSGs application case: Emergency generator structure







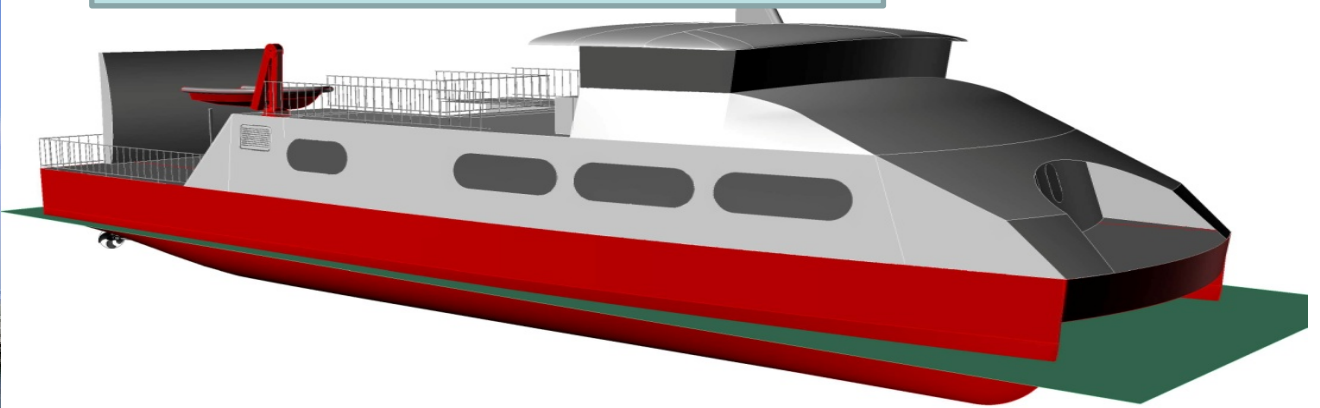


Fully composite displacement ferry, 2013

Capacity:
200 passengers and 6 cars

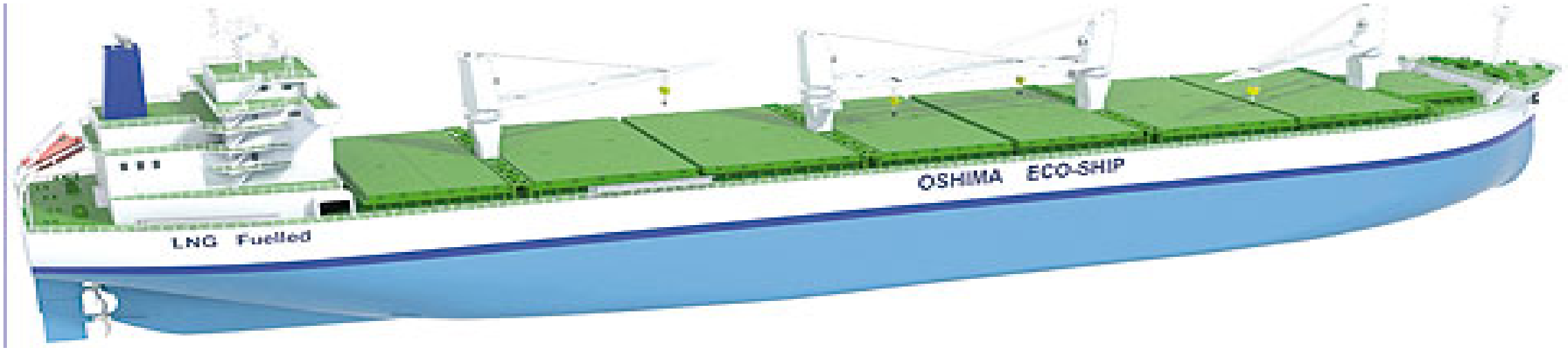
Machinery: 588 kW

100% composite => 120 ton



Machinery: 220 kW

Oshima ECO-Ship, 2014



Scandlines Heavy feries, 2014

M/S BERLIN

M/S PRINSESSE BENEDIKTE

IMO guidelines for use of FRP

Development of guidelines for use of fibre reinforced plastic (FRP) within ship structures

Proposal for a new set of guidelines regarding the use of FRP for ships

IMO INTERNATIONAL MARITIME ORGANIZATION

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SUB-COMMITTEE ON FIRE PROTECTION
56th session
Agenda item 12

FP 56/12
5 October 2012
Original: ENGLISH

DEVELOPMENT OF GUIDELINES FOR USE OF FIBRE REINFORCED PLASTIC (FRP) WITHIN SHIP STRUCTURES

Proposal for a new set of guidelines regarding the use of fibre reinforced plastic for ships

Submitted by Sweden

SUMMARY

Executive summary: The aim of this document is to provide more input to the work on development of guidelines for approval of FRP structures, including fire testing of FRP materials. It is proposed that a correspondence group under the Sub-Committee on Fire Protection be established and a proposal for terms of reference for the group is presented. A proposal for the guidelines is also included. This proposal gives an idea of a possible structure and content of the guidelines and could be used as a starting document for the work.

Strategic direction: 5.2

High-level action: 5.2.1

Planned output: 5.2.1.23

Action to be taken: Paragraph 9

Related documents: MSC 87/24/9, MSC 87/26 (paragraphs 24.14, 24.31 and 24.39.3); C 104/D (paragraph 8.2(iii)); FP 55/19/1, FP 55/INF.3, FP 55/23 (paragraphs 19.5 and 19.6); MSC/Circ.732, MSC/Circ.1002; resolutions MSC.45(65) and MSC.307(88)

Introduction

1 The Maritime Safety Committee, at its eighty-seventh session, agreed to include in the biennial agenda of the FP Sub-Committee and the provisional agenda for FP 55, an

IMO INTERNATIONAL MARITIME ORGANIZATION

SP Technical Research Institute of Sweden

NSC Ch VI, Ed 4
Table 8-2: Fire Resistance Index (REI) Matrix – Bulkheads

			Risk Category				
			Significant	High	Medium	Low	Negligible
			A	B	C	D	E
Value Category	Critical	5	60-60	60-60	60-30	60-0	60-0
	Significant	4	60-60	60-30	60-15	60-0	30-B-15
	Major	3	60-30	60-15	60-0	30-B-15	30-B-0
	Marginal	2	60-0	60-0	30-B-15	30-B-0	30-B-0
	Negligible	1	60-0	30-B-15	30-B-0	30-B-0	0-0

Statements:

Statement #1:
Reaction and resistance to fire challenges for FRP composites in ship building have been shown to be manageable through many research projects, e.g. LASS, SAFEDOR, LASS-c, De-Light Transport, Cargo Xpress, BESST...

Statement #2:
FRP composite in ship building today is a ”Technical project” and not a ”Research project”

Statement #3:
It is always possible to demonstrate equivalent safety in accordance to SOLAS regulation 17 for a vessel with FRP composite

Statement #4:
The main obstacles for composites in ship building today are lack of knowledge/experience within Class, National authorities, Ship operators and (!) initial costs

Reality check; HSC

CarbCAT® 39; Özata Shipyard in Turkey / TBS Yard

36m catamaran; Fjordbris, Br AA. Norway

Visby class corvette, 2000

Reality: P28 Corvette superstructure

M/S Walona 30 m passenger ship, 1985