



INVITED SEMINAR

059248 – SHIP STRUCTURAL ANALYSIS AND DESIGN
057006 - DIGITAL TWIN FOR ENERGY SYSTEMS MANAGEMENT

Andrea Ungaro is a senior specialist of CETENA and an expert in ship combat survivability
Giovanni Rizzo is a senior specialist of CETENA and an expert in structures and materials

Ship combat survivability: Assessment of vulnerability and residual strength

April 18th, 2024
10:30 - 12:00 am
Room B6.3.3

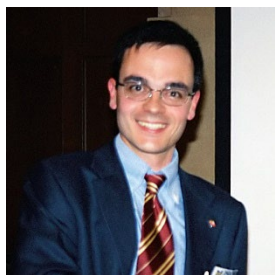
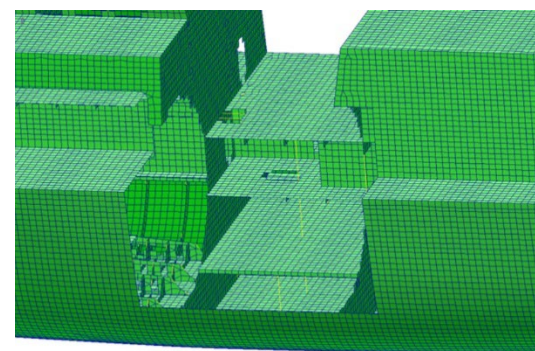
Abstract

Ship combat survivability is not just remaining afloat or returning to port to save the crew: combat survivability implies remaining able to perform the mission after a certain scenario plays out.

The naval ship must maintain the capability of operating in a hostile environment while she carries out her mission, and the safety of the crew and personnel in war time may be less important than the mission.

An historical analysis indicates that there is a significant chance of a ship being hit in wartime, hence it follows that the assessment of the vulnerability of the ship systems and of her residual strength is a fundamental part of the design process.

This presentation illustrates methods used to evaluate both aspects to provide a quantitative basis for trade-off analysis during military ship design, with a view toward their implementation for real-time situation awareness.



Speaker short CV

Andrea Ungaro (andrea.ungaro@cetena.it) is a senior specialist in the Numerical Naval Architecture BU of CETENA, a subsidiary of FINCANTIERI NexTech, with a focus on ship vulnerability, advanced structural analysis and firing arcs studies. He graduated as a Naval Architect and was a Reserve Officer in the technical corps of the Italian Navy. He has participated to six major EU/EDA research projects in various roles dealing with the evaluation of ship performance vs military loads and vulnerability and is a member of the NATO ST/SCS group on combat survivability. He manages the development of VULNUS, the code currently in use to perform vulnerability analyses on combat ships of the Italian Navy. His paper "An overview of warships damage data from 1967 to 2013" was published at STAB 2015.



Giovanni Rizzo (giovanni.rizzo@cetena.it) is a naval architect. He has been working in the Numerical Naval Architecture BU of CETENA, a subsidiary of FINCANTIERI NexTech as expert in structure and material for more of 15 years. He has carried out several activities in the field of the structural analysis to support the design of new vessels (cruise, military, offshore, etc) and the refitting of existing vessels. In particular, he has acquired significant experience in the following type of structural analyses: static and dynamic (both linear and non-linear), fatigue, shock, vibration and impact. He has been involved in several research projects internally and externally funded aimed at investigate new materials for the ship building and the development of new tools/procedures for the design of the ship. He has held the course "Ship Structure" at the Italian Merchant Ship Academy.

Contacts:
claudio.sbarufatti@polimi.it