From Energy in Buildings to Energy in Ships

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Energy in Buildings - A

- Architecture
- Materials
- Thermodynamics
- Heat Transfer
- Fluid and Gas Dynamics
- Electric and Electronic Circuits and Systems

Energy in Buildings - B

- Combustion
- Power Generation
- Renewable Energy Sources
- Sensors
- Control Systems
- Information Systems

Energy in Ships – Life Cycle Cost

- 15% Maintenance
- 15% Energy
- 45% Acquisition
- 25% Manpower

Energy in Ships – Environment

When 1 ton is delivered and 1kg CO2 emitted the distance covered is

- 18 km /Heavy Track
- 48 km /Rail Diesel
- 70 km /Rail Electric
- 120+ km /Container Vessel

Energy in Ships – Efficiency Improvement - Hull

- Stern flaps
- Bulbous Bowls
- Marine Anti-fouling Coatings
- Redesigned Propellers
- Contra rotating Propellers
- …

Energy in Ships – Efficiency Improvement- Power Production and Consumption

- Combustion Control Techniques (Common Rail, Staggered Layout Injection System, Optimized Flow within the Cylinder, 2-stage Sequential Turbocharging, Variable Turbine Area, Miller Cycle, Condition Based Maintenance)
- Internal Combustion Engines Exhaust Heat Recovery (EGR, Rankine Cycle, Organic Rankine Cycle)
- Improved HVAC Systems
- …

Diagnostics on Energy Management – Criteria

- Energy Policy
- Organization of the Resources
- Awareness
- Information Systems
- Promotion of the Strategy and Commitment
- Investments

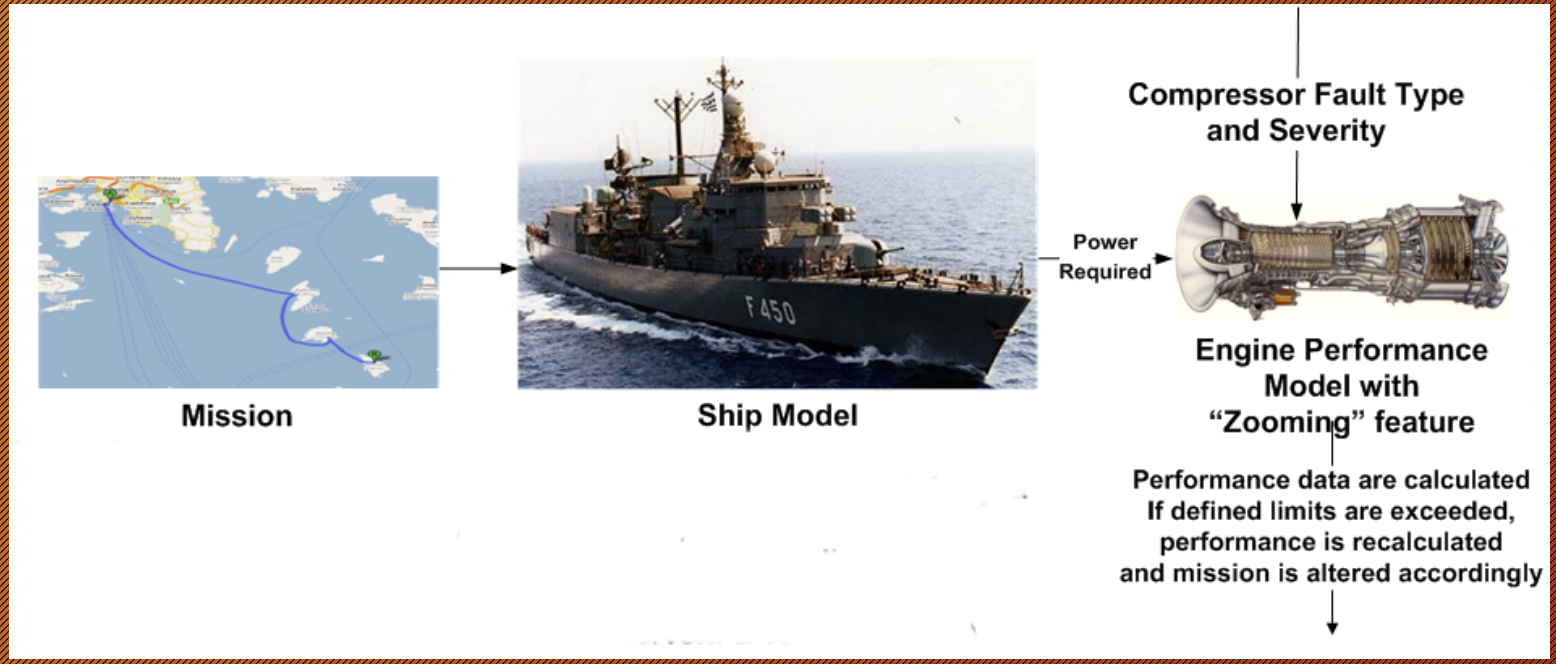
Ship Energy Efficiency Management Plan - SEEMP

- Plan
- Do
- Check
- Act

from the Managerial and the Technical Point of View

NEREUS

Nereus is a gas turbine propulsion system simulation platform under continuous development by the Hellenic Naval Academy and LTT/NTUA. It is an integrated marine vessel simulation environment suitable for education, engine configuration assessment, multi-objective optimizations and engine faults simulation and assessment on engine and vessel operability.



End of the Presentation…

Thank you for your attention!