#	**Pariotis Efthimios** Mechanical Engineer, PhD	
Title:	Assistant Professor Section of Naval Architecture & Marine Engineering Hellenic Naval Academy (HNA)	
Presentation title:	**Energy Saving Techniques in Ships** Subtitle: Technical and Operational Measures	

Maritime transport is the backbone of international trade and the global economy. Around 90 % of global trade by volume and over 70 % of global trade by value are carried by sea and are handled by ports worldwide. International shipping accounts for approximately 2.7% of world CO2 emissions from fossil fuel combustion. International Maritime Organization (IMO) projects that CO2 emissions from international shipping in the absence of mitigation policies will grow by 150-250% by 2050, constituting the 12-18% of the total allowable CO2 emissions. According to the Intergovernmental Panel on Climate Change (IPCC), in order to reach the target of no more than 2°C temperature increase until 2100, the global GHG emissions in 2050 need to be ≈55 % below the 2010 levels. In this context, IMO has set mandatory international strict and achievable CO_2 emissions mitigating standards / legislation.

To reduce fuel consumption and mitigate CO_2 emissions from international maritime activity a mixture of Technical, Operational and Market Based Measures should be applied. The right mixture of measures is ship / case dependent in order to minimize the real cost of Energy / CO_2 reduction (marginal CO2 abatement cost). Depending on the underlying concept, these measures aim either to lower the demand of power for the same transport work (using technologies that directly impact the ship hydrodynamics), or reduce fuel consumption through better energy utilization (i.e. increase engine efficiency), using technologies related with engine operating parameters / combustion.

The current presentation aims to provide in a simple but scientifically well documented way, the fundamental basis of some of the most common techniques and operational measures that are currently available or have been proposed for the near future, to improve the energy efficiency of ships (existing and new ones). Among them are techniques focused on overall vessel design, the propulsion system and how it interacts with the hull design, the engine design as well as operational measures.

CV:	

Dr. Efthimios Pariotis was born in 1972 in Greece. He received his MSc Diploma in Mechanical Engineering in 1995 and his PhD degree in 2005 from the National Technical University of Athens (NTUA). From 1997 until 2009 he has been an adjunct faculty member at the Internal Combustion Engines Laboratory (ICEL) of the Scholl of Mechanical Engineers in NTUA, participating in the teaching of "Internal Combustion Engines I (Thermodynamics)" at a graduated course and "Thermal Engines" at a Post-graduated course. From 2005 to 2008 he has been an adjunct Lecturer at the Hellenic Army Academy, being responsible for teaching "Internal Combustion Engines". Since 2009 he is Assistant Professor at the Hellenic Naval Academy, being responsible for teaching the course of "Heat Transfer" and "Marine Auxiliary Systems and Pipe Networks" and co-teaches the courses "Thermodynamics", "Marine Diesel Engines" and "Fluid Mechanics".

His research interests focus on Diesel Engines performance and emission modeling using phenomenological and CFD models, techniques for diesel engine emission reduction using internal measures, Diesel engine experimental techniques focusing on performance & emissions, Exhaust heat recovery, Heat transfer in Internal Combustion Engines and the application of Energy saving techniques in Ships.

Dr. Pariotis has participated in 24 European and National projects as a member of the Internal Combustion Engines Laboratory (ICEL) of NTUA, focusing on diesel engine performance and emissions, in cooperation with major EU engine manufacturers / stakeholders. His research work has been published in 40 publications at peered reviewed International Journals and Conferences and he has over 350 external references on his work.