

# USN Propulsion and Power – Gas Turbines and Diesels

15 April 2016 – ME Lecture Hall – 1300

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### Abstract:

The Department of Defense (DoD) is responsible for 93% of all US government fuel consumption in 2007 broken down into Air Force: 52%; Navy: 33%; Army: 7%. Other DoD: 1%. The talk will highlight the use of fossil fuels by the USN and show where most of the consumption goes.

We will look at new technologies to improve fuel consumption, some of which have and are being employed in new combatants. The thermodynamics of gas turbines and diesel engines will be introduced and more complex systems will be explained. The problems associated with these more complex cycles will be explained. A revolutionary solution to the Navy's gas turbine fuel use at sea will finally be proposed.

### Biography:

Dr. Hobson is a professor and chair of the Department of Mechanical and Aerospace Engineering specializing in experimental and computational turbomachinery problems. He has more than 50 journal and refereed conference publications in this field. His current research interests are in transonic fan and compressor aerodynamics, stall precursors, inlet distortion, cross-flow fan propulsion, miniature gas turbines for UAV propulsion, transitional flows in compressor cascades, erosion of compressor blades due to sand ingestion, high cycle fatigue and signature suppression. He has been the director of the Turbopropulsion Laboratory since 2005. He earned his PhD in Aerospace Engineering at the Pennsylvania State University in 1989, and subsequently the faculty at the Naval Postgraduate School in 1990 as an Associate Professor in the Department of Aeronautical and Astronautical Engineering. Prior to that, he worked at the National Institute for Aeronautics and Systems Technology, South Africa. He earned his MSc in Mechanical Engineering (1983) and BSc in Aeronautical Engineering (1979) both from the University of the Witwatersrand, Johannesburg.



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