SNAME Press Release August 12, 2010

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SNAME Publications Releases

Principles of Naval Architecture Series: Ship Resistance & Flow

Landmark Naval Architecture Text Updated by Award-winning Professor

Principles of Naval Architecture: Ship Resistance & Flow
Authors: Lars Larsson & Hoyte C. Raven
Editor: J. Randolph Paulling
ISBN: 978-0-939773-76-3
List Price: $65.00
Member Price: $55.00
Student Member Price: $45.00
Available now through SNAME Books on www.SNAME.org

About the Book:

The Principles of Naval Architecture series is the defining reference work and text for naval architecture. This volume contains a completely new presentation of the subject of ship resistance embodying these developments. A major goal in the design of virtually all vessels is to obtain a hull form having low resistance. In achieving this goal, the accurate prediction of resistance for a given hull geometry is essential. Since the publication of the previous edition of PNA important advances have been made in theoretical and computational fluid dynamics accompanied by increased use of such work in ship and offshore structure design.

The first section of the book provides basic understanding of the flow phenomena that underlie the resistance encountered by a ship moving in water. The second section contains an introduction to the methods by which that knowledge is applied to the prediction of resistance, including model testing, empirical methods and computational methods. A final section provides guidance to the naval architect in designing a hull form. Design procedures are described for achieving favorable flow and resistance characteristics of the hull and appendages. Examples are given for ships designed for high, medium and low speeds. Design considerations affecting both wave and viscous effects are included. Finally the flow in the stern wake is discussed, an area important for both resistance and propeller performance.

About the Authors:

Lars Larsson is a Professor of Hydrodynamics at Chalmers University of Technology in Gothenburg, Sweden. He was Head of the Department of Naval Architecture and Ocean Engineering 1999–2005 and was Vice Head and responsible for the Graduate Program at the Department of Shipping and Marine Technology 2006–2009. In 2002–2010 he was also the Director of the Rolls-Royce University Technology Centre in Computational Hydrodynamics at Chalmers. Prof. Larsson was one of the founders of the CFD software company FLOWTECH International AB in 1989 and was its Managing Director 1989–1999. Presently he is Chairman of the Board. During the period 1971–1989 he was a research engineer at the maritime consulting company SSPA in Gothenburg. He received his MSc in Naval Architecture from Chalmers in 1969 and has a PhD in Applied Thermo and Fluid Dynamics from Chalmers in 1975.

Hoyte C. Raven is a Principal Researcher at the Maritime Research Institute Netherlands in Wageningen, Netherlands. He graduated from Delft University of Technology in 1978, with a Master's degree in Naval Architecture, and joined MARIN immediately. He received his PhD at Delft in 1996 on a Thesis on the development of a nonlinear free-surface potential flow method, as implemented in the code RAPID. Dr. Raven has been research coordinator at MARIN for flow around the hull and hull form design.

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