



Practical Ship Hydrodynamics

By Volker Bertram

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Practical Ship Hydrodynamics By Volker Bertram

Practical Ship Hydrodynamics, Second Edition, introduces the reader to modern ship hydrodynamics. It describes experimental and numerical methods for ship resistance and propulsion, maneuvering, seakeeping, hydrodynamic aspects of ship vibrations, and hydrodynamic options for fuel efficiency, as well as new developments in computational methods and model testing techniques relating to marine design and development.

Organized into six chapters, the book begins with an overview of problems and approaches, including the basics of modeling and full-scale testing, prediction of ship hydrodynamic performance, and viscous flow computations. It proceeds with a discussion of the marine applications of computational fluid dynamics and boundary element methods, factors affecting ship hydrodynamics, and simple design estimates of hydrodynamic quantities such as resistance and wake fraction. Seakeeping of ships is investigated with respect to issues such as maximum speed in a seaway, route optimization (routing), structural design of the ship with respect to loads in seaways, and habitation comfort and safety of people on board. Exercises and solutions, formula derivations, and texts are included to support teaching or self-studies.

This book is suitable for marine engineering students in design and hydrodynamics courses, professors teaching a course in general fluid dynamics, practicing marine engineers and naval architects, and consulting marine engineers.

- Combines otherwise disparate information on the factors affecting ship hydrodynamics into one practical, go-to resource for successful design, development and construction.
- Updated throughout to cover the developments in computational methods and modeling techniques since the first edition published more than 10 years ago.
- New chapters on hydrodynamic aspects of ship vibrations and hydrodynamic options for fuel efficiency, and increased coverage of simple design estimates of hydrodynamic quantities such as resistance and wake fraction.

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Practical Ship Hydrodynamics By Volker Bertram Bibliography

- Rank: #2150760 in eBooks
- Published on: 2011-09-06
- Released on: 2011-09-06
- Format: Kindle eBook

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Editorial Review

Review

"To the experienced naval architect the comprehensive descriptions of the numerical methods will provide a unique opportunity of updating his knowledge in this special field... The author, as well as those interested in the latest developments in ship hydrodynamics, whether practising naval architects, university professors or students, should be congratulated with the publication of this book."

HANSA journal, October 2000

"Highly useful for graduate and post-graduate students, the book is also a professional reference work for naval architects and consulting engineers." Maritime Journal

"The author should be congratulated with the publication of this book... it will be studied with interest by professionals and students all over the world."

Poul Anderson, Technical University of Denmark

"The book covers quite a lot of ground...should prove very useful to senior students and to practitioners in naval architecture. The book is well presented and will prove very interesting and useful to those involved in these fields of naval architecture." The Naval Architect, Jan 2001

From the Publisher

The book provides a global overview of experimental and numerical methods for ship resistance and propulsion, manoeuvring and seakeeping. As boundary element techniques are now in standard use, these are covered in sufficient detail for independent code development.

From the Back Cover

Practical Ship Hydrodynamics provides a comprehensive overview of hydrodynamic experimental and numerical methods for ship resistance and propulsion, maneuvering, seakeeping and vibration.

Beginning with an overview of problems and approaches, including the basics of modeling and full scale testing, expert author **Volker Bertram** introduces the marine applications of computational fluid dynamics and boundary element methods.

Expanded and updated, this new edition includes:

- Otherwise disparate information on the factors affecting ship hydrodynamics, combined to provide one practical, go-to resource.
- Full coverage of new developments in computational methods and model testing techniques relating to marine design and development.
- New chapters on hydrodynamic aspects of ship vibrations and hydrodynamic options for fuel efficiency, and increased coverage of simple design estimates of hydrodynamic quantities such as resistance and wake fraction.

With a strong focus on essential background for real-life modeling, this book is an ideal reference for

practicing naval architects and graduate students.

Users Review

From reader reviews:

Rudy Lapan:

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