

# Boundary Layer Flow over Elastic Surfaces: Compliant Surfaces and Combined Methods for Marine Vessel Drag Reduction

Viktor V Babenko, Ho-Hwan Chun, Inwon Lee

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### **Boundary Layer Flow over Elastic Surfaces: Compliant Surfaces and Combined Methods for Marine Vessel Drag** Reduction

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While other methods of drag reduction are well-known in marine R&D and ship design environments worldwide, compliant coating drag reduction remains less well-known and poorly understood. This important book presents cutting-edge techniques and findings from research sources not generally accessible by Western researchers and engineers, aiding the application and further development of this potentially important technology.

Beginning with an introduction to drag reduction that places the authors' work on elastic surfaces and combined techniques in context, the book moves on to provide a comprehensive study of drag reduction through elastic coating with both flow and material properties considered. Coverage includes:

- Experimental findings around coherent vortical structures (CVS) in turbulent boundary layers and methods of controlling them
- Static and dynamic mechanical characteristics of elastic composite coatings, as well as new techniques and devices developed for their measurement
- Combined methods of flow control and drag reduction, including the effect of injection of polymer solutions, elastic coatings and generated longitudinal vortical structures on hydrodynamic resistance

Intended as a reference for senior engineers and researchers concerned with the drag reduction and the dynamics of turbulent boundary layer flows, Boundary Layer Flow over Elastic Surfaces provides a unique source of information on compliant surface drag reduction and the experimental techniques around it that have shown measurable and repeatable improvements over recent years.

This compilation of research findings and new techniques developed for measurement will aid R&D engineers, naval architects and senior designers in their quest to achieve drag reductions that will deliver significant efficiency savings.

- Unique source of information on compliant surface drag reduction-an important area of technology with practical application to ships-from otherwise inaccessible research studies
- Updates the knowledge-base on boundary layer flow and surface friction reduction, critical topics in the global quest for increased ship efficiency and fuel economy
- Reveals new techniques and devices developed for measurement and provides a comprehensive study of drag reduction through elastic coating with both flow and material properties covered

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