DESCRIPTION

In the past Computational Fluid Dynamics (CFD) was confined to large organisations capable of developing and supporting their own codes. But recently there has been a rapid increase in the availability of reasonably priced commercial codes, and many more industrial organisations are now able to routinely use CFD.

Advances of CFD in Fluid Machinery Design provide the perfect opportunity to find out what industry is doing and this book addresses how CFD is now being increasingly used in the design process, rather than as a post-design analysis tool.

COMPLETE CONTENTS

• Trends in industrial use of CFD

• Challenges and methodologies in the design of axial flow fans for high-bypass-ratio, gas turbine engines using steady and unsteady CFD

• A three-dimensional inverse method based on pressure loading for the design of turbomachinery blades

• Application of CFD to the design and analysis of axial and centrifugal fans and compressors

• The design and performance of a transonic flow deswirling system – an application of current CFD design techniques tested against model and full-scale experiments

• Recent developments in unsteady flow modelling for turbomachinery aeroelasticity
• Computational investigation of flow in casing treatments for stall delay in axial flow fans

• Use of CFD for the three-dimensional hydrodynamic design of vertical diffuser pumps

• Recommendations to designers for CFD pump impeller and diffuser simulations

• Three dimensional CFD – a possibility to analyse piston pump flow dynamics

• CFD analysis of screw compressor performance

• Prediction of aerothermal phenomena in high-speed discstator systems

• Use of CFD in the design of a shaft seal for high-performance turbomachinery

Users and potential users, of CFD for the design of fluid machinery, managers, designers, and researchers working in the field of ‘industrial flows’, will all find Advances of CFD in Fluid Machinery Design a valuable volume discussing state-of-the-art developments in CFD.

⚠️ ABOUT THE AUTHOR

Robin Elder and Antonios Tourlidakis are the authors of Advances of CFD in Fluid Machinery Design, published by Wiley.

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