

Book Review

Flow Visualization IV

Claude Veret, Editor, Hemisphere Publishing Corp., New York, 1987, 918 pp., \$149.95

This book is the fourth in a series of proceedings published by Hemisphere Publishing Corporation of the International Symposium on Flow Visualization held every three years. Volume I was published in 1979, Volume II in 1982, and Volume III in 1985.

The visualization of flow patterns has played an extremely important role in advancing our understanding of the motions of fluids. Visualization has led to the discovery of flow phenomena, has helped in the development of mathematical models for complicated flow situations and in the verification of basic principles, and has been an important tool in the development of complex engineering systems. Flow visualization is the oldest, and for some was the only, experimental technique available yet its acceptance and use by large numbers of researchers is only two decades old.

The intent of this symposium was to review long-established flow visualization methods as well as recent developments of newer techniques. The established or classical methods include the optical techniques of shadowgraph, schlieren, and interferometer and the direct injection of smoke in air or dye in liquids. Other methods that have been in use for some time include the use of tufts, and liquid-film surface agents as well as hydrogen bubbles. Recent developments with great potential include the use of lasers in holography, speckle methods, laser light sheets to illuminate smoke or dye, and laser-induced traces and laser-induced fluorescence.

The papers in this volume are arranged under the following headings: optical techniques, speckle techniques,

observation methods, image processing, flow studies, boundary layers, stratified flows, mixing layers, vortices and wakes, jets, supersonic and hypersonic flows, velocity fields, two-phase flows, heat transfer, engines, various applications, and abstracts of papers not presented.

Although there are 143 papers plus 11 abstracts describing applications of flow visualization to a wide variety of engineering problems, the use of lasers, high-speed video recording, and digital image processing represent the relatively new techniques with great potential for the future. Papers describing the use of image-processing techniques to identify organized flow structures, reconstruct three-dimensional flow images, as well as evaluate turbulent flow structures are but a few specific examples of the problems studied. These studies include both air and water as the fluid and use dye, particles or smoke as the tracer element. Illumination with a laser light sheet and recording of the images with high-speed video is rapidly becoming the preferred experimental procedure.

The papers included in this book represent the state-of-the-art in visualizing complex flow phenomena and in acquiring quantitative measurements of flow characteristics from visual images. Many of the papers are from individuals or organizations known for their pioneering work in the development of flow visualization techniques.

This book is a valuable reference in the rapidly growing field of flow visualization.

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Notice to Subscribers

We apologize that this issue was mailed to you late. As you may know, AIAA recently relocated its headquarters staff from New York, N.Y. to Washington, D.C., and this has caused some unavoidable disruption of staff operations. We will be able to make up some of the lost time each month and should be back to our normal schedule, with larger issues, in just a few months. In the meanwhile, we appreciate your patience.