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Soggetti	Fluid mechanics Thermodynamics Heat engineering Heat transfer Mass transfer Fluids Engineering Fluid Dynamics Engineering Thermodynamics, Heat and Mass Transfer Fluid- and Aerodynamics
Lingua di pubblicazione	Inglese
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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Mass Conservation -- Conservation of Momentum -- Derivatives for the Equations of State -- On the Variety of Notations of the Energy Conservation for Single-phase Flow -- First and Second Laws of the Thermodynamics -- Some Simple Applications of Mass and Energy Conservation -- Exergy of Multi-Phase Multi-Component Systems -- One-Dimensional Three-Fluid Flows -- Detonation Waves Caused by Chemical Reactions or by Melt-Coolant Interactions -- Conservation Equations In General Curvilinear Coordinate Systems -- Type of the

System of PDEs -- Numerical Solution Methods for Multi-Phase Flow Problems -- Numerical Methods for Multi-Phase Flow in Curvilinear Coordinate Systems -- Conservation Equations in the Relative Coordinate System -- Visual Demonstration of the Method.

Sommario/riassunto

In its fifth extended edition the successful monograph package “Multiphase Flow Dynamics” contains theory, methods and practical experience for describing complex transient multi-phase processes in arbitrary geometrical configurations, providing a systematic presentation of the theory and practice of numerical multi-phase fluid dynamics. In the present first volume the local volume and time averaging is used to derive a complete set of conservation equations for three fluids each of them having multi components as constituents. Large parts of the book are devoted on the design of successful numerical methods for solving the obtained system of partial differential equations. Finally the analysis is repeated for boundary fitted curvilinear coordinate systems designing methods applicable for interconnected multi-blocks. This fifth edition includes various updates, extensions, improvements and corrections, as well as a completely new chapter containing the basic physics describing the multi-phase flow in turbines, compressors, pumps and other rotating hydraulic machines.