Record Nr. UNINA9910988283703321 Autore **Huda Zainul Titolo** Metal Casting Engineering: Design, Processes, Calculations / / by Zainul Huda Cham:,: Springer Nature Switzerland:,: Imprint: Springer,, 2025 Pubbl/distr/stampa **ISBN** 9783031846205 3031846206 Edizione [1st ed. 2025.] Descrizione fisica 1 online resource (347 pages) Collana Mechanical Engineering Series, , 2192-063X Disciplina 620.16 Soggetti Metals Materials **Building materials** Industrial engineering Production engineering Metals and Alloys Metal-organic Frameworks Steel, Light Metal Industrial and Production Engineering Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Introduction -- Melting and Solidification of Metals -- Solidification Nota di contenuto Behavior in Metal Casting -- Melting Furnaces in Foundry Practice --Cold Blast Cupola -- Sand Casting Design and Processes -- Worked Casting-Design Project -- Shell Mold Casting and Lost Wax Casting Processes -- Investment Casting Process -- Basic Permanent Mold Casting and Die Casting Processes -- Centrifugal Casting Process --Inspection, Casting Defects, and Quality Assurance -- Safety Economic and Environmental Considerations in Foundry. This book covers all main aspects of metal-casting processes and Sommario/riassunto practices, including mold/gating-system design, melting of metal, solidification, QC/QA, safety, economic, and environmental

considerations. The flow and solidification of metal is presented with reference to Bernoulli's Law, Fick's 2nd law, and Chvorinov's rule, with

detailed mathematical analyses and calculations. Foundry practices involving mold design, molding sand characteristics, melting furnaces, testing/NDT, and QC are explained, including both conventional casting processes and recent advances in casting technologies. There are around 120 diagrammatic illustrations, which have been properly labelled to enhance the understanding of readers. One of the salient features of the book is the inclusion of an industrially-oriented project; the key solution of the project is presented with the aid of mathematical analysis and diagrams. The metal-casting design project cultivates managerial skills enabling the reader to work effectively as an engineer/manufacturing manager in an industry. Presents an industry-oriented, casting-design project with key solution; Features 200 worked numerical examples, 120 diagrams, and 100 questions with answers; Develops skills of manufacturing quality machine components at a low cost incorporating lean, eco-friendly manufacturing.

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