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ISBN	3-642-40114-7
Edizione	[3rd ed. 2014.]
Descrizione fisica	1 online resource (1146 p.)
Disciplina	621.67
Soggetti	Machinery Fluid mechanics Energy systems Industrial engineering Production engineering Energy Machinery and Machine Elements Engineering Fluid Dynamics Energy Systems Industrial and Production Engineering Energy, general
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Fluid dynamic principles -- Pump types and performance data -- Pump hydraulics and physical concepts -- Performance characteristics -- Partload operation, impact of 3-D flow phenomena performance -- Suction capability and cavitation -- Design of the hydraulic components -- Numerical flow calculations -- Hydraulic forces -- Noise and Vibrations -- Operation of centrifugal pumps -- Turbine operation, general characteristics -- Influence of the medium on performance -- Selection of materials exposed to high flow velocities -- Pump selection and quality considerations -- Pump testing.
Sommario/riassunto	This book gives an unparalleled, up-to-date, in-depth treatment of all kinds of flow phenomena encountered in centrifugal pumps including the complex interactions of fluid flow with vibrations and wear of

materials. The scope includes all aspects of hydraulic design, 3D-flow phenomena and partload operation, cavitation, numerical flow calculations, hydraulic forces, pressure pulsations, noise, pump vibrations (notably bearing housing vibration diagnostics and remedies), pipe vibrations, pump characteristics and pump operation, design of intake structures, the effects of highly viscous flows, pumping of gas-liquid mixtures, hydraulic transport of solids, fatigue damage to impellers or diffusers, material selection under the aspects of fatigue, corrosion, erosion-corrosion or hydro-abrasive wear, pump selection, and hydraulic quality criteria. As a novelty, the 3rd ed. brings a fully analytical design method for radial impellers, which eliminates the arbitrary choices inherent to former design procedures. The discussions of vibrations, noise, unsteady flow phenomena, stability, hydraulic excitation forces and cavitation have been signfificantly enhanced. To ease the use of the information, the methods and procedures for the various calculations and failure diagnostics discussed in the text are gathered in about 150 pages of tables which may be considered as almost unique in the open literature. The text focuses on practical application in the industry and is free of mathematical or theoretical ballast. In order to find viable solutions in practice, the physical mechanisms involved should be thoroughly understood. The book is focused on fostering this understanding which will benefit the pump engineer in industry as well as academia and students.