1. Record Nr. UNINA9910686773203321

Autore	Visintainer Robert
Titolo	Slurry transport using centrifugal pumps / / Robert Visintainer [and three others]
Pubbl/distr/stampa	Cham, Switzerland : , : Springer Nature Switzerland AG, , [2023] ©2023
ISBN	9783031254406 9783031254390
Edizione	[Fourth edition.]
Descrizione fisica	1 online resource (494 pages)
Disciplina	621.8672
Soggetti	Centrifugal pumps Slurry pipelines
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Review of Fluid and Particle Mechanics -- Flow of Non-Settling Slurries -- Principles of Particulate Slurry Flow -- Motion and Deposition of Settling Solids -- Heterogeneous Slurry Flow in Horizontal Pipes -- Complex Slurries -- Vertical and Inclined Slurry Flow -- Centrifugal Pumps -- Effect of Solids on Pump Performance -- Wear and Attrition -- Components of Slurry Systems -- System Design and Operability -- Pump Selection and Cost Considerations -- Practical Experience with Slurry Systems -- Environmental Aspects of Slurry Systems.
Sommario/riassunto	Based on the industry leading short course “Transportation of Solids using Centrifugal Pumps,” founded by Dr. Kenneth Wilson and Graeme Addie, and hosted by the GIW Industries Hydraulic Laboratory, this expanded fourth edition has been extensively updated by the international team of engineers and authors who inherited this legacy and continue its development to the present day. Focusing on the hydraulic design of slurry pipelines, the pumps that power them, and the interactions between pumps and systems, it retains the classroom tested balance of theoretical development and practical engineering which have made it a slurry transport classic. The topics covered are important to slurry system engineers for the optimization of new designs, as well as the operators of existing systems, who may need to

calculate and plan for changing conditions from day to day. Updates to the fourth edition include: Careful formulation of the theoretical concepts, providing greater clarity of slurry flow dynamics, including a new chapter on the principles and characterization of slurry flows. Expansion of the 4-Component Models for settling slurry pipeline flow and pump solids effect, based on an extensive series of full-sized tests. An expanded treatment of complex slurries, including a broader discussion of non-Newtonian fluids and their interaction with coarse particles. A new chapter on test methods, presenting an overview of slurry system instrumentation, modern techniques for characterizing slurry rheology, and practical advice for planning and executing a slurry test. An overview of advances in the computational modeling of slurries, including an in-depth parametric study of slurry pump wear and operating cost. The authors highlight methods for achieving energy efficiency, which are crucial to the effective use of scarce resources, given the foundational role of slurry transport systems in the energy intensive industries of mining and dredging. Key concepts are supported with case studies and worked examples. Slurry Transport Using Centrifugal Pumps, fourth edition, is both methodical and in-depth. It is ideal as a teaching tool for classroom or self-directed learning domains, and valuable as a design guide for engineer practitioners at all experience levels. Stands as an authoritative reference for engineers in the dredging, mining, mineral and chemical processing industries; Incorporates the latest advances in the field, including both theory and practice. Reinforces concepts presented with worked solutions and case studies.