

1. Record Nr.	UNINA9910782124703321
Titolo	Abrasive erosion & corrosion of hydraulic machinery [[electronic resource] /] / editors, C.G. Duan, V.Y. Karelín
Pubbl/distr/stampa	London, : Imperial College Press, c2002
ISBN	1-281-86575-3 9786611865757 1-84816-002-X
Descrizione fisica	1 online resource (424 p.)
Collana	Series on hydraulic machinery ; ; v. 2
Altri autori (Persone)	DuanChangguo KarelínV. IA (Vladimir IAkovlevich)
Disciplina	621.2
Soggetti	Hydraulic machinery - Corrosion
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.
Nota di contenuto	CONTENTS; Foreword of the Editor; Contributing Authors; Chapter 1 Fundamentals of Hydroabrasive Erosion Theory; 1.1 Introduction; 1.2 Mechanism of Hydraulic Abrasive Effect of Particles; 1.2.1 Mechanism of Hydro-abrasion; 1.3 Abrasive Erosion of Hydraulic Turbine; 1.3.1 Illustrative Examples of Hydraulic Abrasion in Hydraulic Turbines; 1.3.2 Silt Erosion of Hydro-turbines; 1.4 Abrasive Erosion of Pump; 1.4.1 Examples of Hydraulic Abrasion Taking Place in Pumps; 1.4.2 Silt Erosion in Pumps; 1.5 Technical and Economic Effect Caused by the Erosion Arising in Hydraulic Turbines and Pumps 1.6 Approach to Anti Abrasive from Hydraulic Machinery1.6.1 Approach Avenues on Anti-silt Erosion of Hydraulic Machinery; 1.6.2 Anti-abrasion Hydraulic Design of Pumps; 1.6.3 Prediction of Silt-Erosion Damage in Pump Design by Test; References; Chapter 2 Calculation of Hydraulic Abrasion; 2.1 Calculation of Hydraulic Abrasion Proposed by V.Ya. Karelín and A. I. Denisov; 2.2 Prediction Model of Hydraulic Abrasion; 2.2.1 Prediction Erosion Model Proposed by Finnie and Bitter; 2.2.2 Mechanistic Model Developed by The Erosion/Corrosion Research Center 2.2.3 Prediction Erosion Model Proposed by McLaury et alReferences; Chapter 3 Analysis and Numerical Simulation of Liquid-Solid Two-Phase Flow; 3.1 Basic Equations of Liquid-Solid Two-Phase Flow

through Hydraulic Machinery; 3.1.1 Introduction; 3.1.2 General Concepts of Multiphase Flow; 3.1.3 Basic Equations of Multiphase Flow; 3.2 Closed Turbulent Equations for Liquid-Solid Two- Phase Flow through Hydraulic Machinery; 3.2.1 Closed Turbulence Model Using the Modeled Second Correlation; 3.2.2 The Algebraic Turbulence Stresses Model of Two-Phase Flow
3.2.3 The $k - k_p$ Turbulence Model of Two-Phase Flow
3.2.4 Lagrangian-Eulerian Model for Liquid-Particle Two-Phase Flow; 3.3 Numerical Simulation of Liquid-Particle Two-Phase Flow through Hydraulic Machinery by Two-Fluid Model; 3.3.1 Numerical Method for Simulating Liquid-Particle Two- Phase Flow; 3.3.2 Calculated Examples of Two-Turbulent Flow by Using Two-Fluid Model; References; Chapter 4 Design of Hydraulic Machinery Working in Sand Laden Water; 4.1 Hydraulic Design of Turbines; 4.1.1 Introduction; 4.1.2 Impulse Turbines; 4.1.3 Reaction Turbines
4.2 Effects of Silt-Laden Flow on Cavitation Performances and Geometric Parameters of Hydraulic Turbines
4.2.1 Effects of Silt-Laden Flow on Cavitation Performances of Hydrauliv Turbines; 4.2.2 Model Experiments on Cavitation of Turbines in Silt-Laden Flow; 4.2.3 Selection of Geometric Parameters of Turbines Operating in Silt-Laden Flow; 4.3 Hydraulic Design of Slurry Pump; 4.3.1 Internal Flow Characters through Slurry Pumps; 4.3.2 Effects of Impeller Geometry on Performances of Slurry Pumps and Its Determination; 4.3.3 Vane Pattern; 4.3.4 Hydraulic Design of Centrifugal Slurry Pumps
4.3.5 Hydraulic Design of Slurry Pump Casing

Sommario/riassunto

This book gives a systematic exposition of abrasive erosion and corrosion of hydraulic machinery in both theory and engineering practice, and is the first comprehensive volume to cover this area in depth. All the important subjects are discussed including fundamentals, calculation, analysis and numerical simulation of liquid-solid flow design, erosion-resistant materials, interaction between cavitation and abrasive erosion, and corrosion of hydraulic machinery.

<i>Contents:</i>Fundamentals of Hydroabrasive Erosion Theory <i>(V Y Karelín et al.)</i>Calculation of Hydraul
