Slurries And Non Newtonian Fluids Maxiom Flow Ab

Because of the importance of multiphase flows in a wide variety of industries, including power, petroleum, and numerous processing industries, an understanding of the behavior and underlying theoretical concepts of these systems is critical. Contributed by a team of prominent experts led by a specialist with more than thirty years of experience, the Multiphase Flow Handbook provides such an understanding, and much more. It covers all aspects of multiphase flows, from fundamentals to numerical methods and instrumentation. The book begins with an introduction to the fundamentals of particle/fluid/bubble interactions followed by gas/liquid flows and methods for calculating system parameters. It includes up-to-date information on practical industrial applications such as boiling and condensation, fluidized beds, aerosols, separation systems, pollution control, granular and porous media flow, pneumatic and slurry transport, and sprays. Coverage then turns to the most recent information on particle/droplet-fluid interactions, with a chapter devoted to microgravity and microscale flows and another on basic multiphase interactions. Rounding out the presentation, the authors discuss numerical methods, state-of-the art instrumentation, and advanced experimental techniques. Supplying up-to-date, authoritative information on all aspects of multiphase flows along with numerous problems and examples, the Multiphase Flow Handbook is the most complete reference available for understanding the flow of multiphase mixtures.

This complete revision of Applied Process Design for Chemical and Petrochemical Plants, Volume 1 builds upon Ernest E. Ludwig's classic text to further enhance its use as a chemical engineering process design manual of methods and proven fundamentals. This new edition includes important supplemental mechanical and related data, nomographs and charts. Also included within are improved techniques and fundamental methodologies, to guide the engineer in designing process equipment and applying chemical processes to properly detailed equipment. All three volumes of Applied Process Design for Chemical and Petrochemical Plants serve the practicing engineer by providing organized design procedures, details on the equipment suitable for application selection, and charts in readily usable form. Process engineers, designers, and operators will find more chemical petrochemical plant design data in: Volume 2, Third Edition, which covers distillation and packed towers as well as material on azeotropes and ideal/non-ideal systems. Volume 3, Third Edition, which covers heat transfer, refrigeration systems, compression surge drums, and mechanical drivers. A. Kayode Coker, is Chairman of Chemical & Process Engineering Technology department at Jubail Industrial College in Saudi Arabia. He's both a chartered scientist and a chartered chemical engineer for more than 15 years. and an author of Fortran Programs for Chemical Process Design, Analysis and Simulation, Gulf Publishing Co., and Modeling of Chemical Kinetics and Reactor Design, Butterworth-Heinemann. Provides improved design manuals for methods and proven fundamentals of process design with related data and charts Covers a complete range of basic day-to-day petrochemical operation topics with new material on significant industry changes since 1995.

The operation of a powder mixer requires a knowledge not only of the mixing mechanisms but of the physical properties of the powders being mixed. Powder Mixing is unique in that it explores the relevant physics of the powder systems including characterization procedures and rheology, and contains an extensive review of different methods that have been employed to study the structure of mixtures. The techniques for achieving structured mixtures such as microencapsulation, and recent developments in deterministic chaos theory and fractal geometry as applied to the study of powder mixing systems, are reviewed. In particular, new techniques for studying the mixing powders based on avalanching theory and critically self-organized systems are studied. These are followed by a review of the wide range of different mixers commercially available and an extensive bibliography. Powder Mixing is an essential reference for all those interested in the basic science of powder mixing and the availability of industrial systems to achieve a mixture of different kinds. The main emphasis of the text is on working principles and operative systems, and is suitable for industrial workers, chemical engineers and students alike.

A Bibliography

Recent Advances in Mechanics of Non-Newtonian Fluids

Mechanical Mixing of High Concentration Biomass Slurry

Engineering Applications

A Path Forward to Understanding Non-Newtonian Multiphase Slurry Flows

Introduction to Practical Fluid Flow provides information on the the solution of practical fluid flow and fluid transportation problems through the application of fluid dynamics. Emphasising the solution of practical operating and design problems, the text concentrates on computer-based methods throughout, in keeping with trends in engineering. With a focus on the flow of slurries and non-Newtonian fluids, it will be useful for and engineering students who have to deal with practical fluid flow problems. Emphasises flow of slurries and Non-Newtonian fluids. Covers the application of fluid dynamics to the solution of practical fluid flow and fluid transportation problems.

The Department of Energy's (DOE) National Energy Technology Laboratory (NETL) sponsored a workshop on non-Newtonian multiphase slurry at NETL's Morgantown campus August 19 and 20, 2013. The objective of this special two-day meeting of 20-30 invited experts from industry, National Labs and academia was to identify and address technical issues associated with handling non-Newtonian multiphase slurries across various facilities managed by DOE. Particular emphasis during this workshop was placed on applications managed by the Office of Environmental Management (EM). The workshop was preceded by two webinars wherein personnel from ORP and NETL provided background information on the Hanford WTP project and discussed the critical design challenges facing this project. In non-Newtonian fluids, viscosity is not constant and exhibits a complex dependence on applied shear stress or deformation. Many applications under EM's tank farm mission involve non-Newtonian slurries that are multiphase in nature; tank farm storage and handling, slurry transport, and mixing all involve multiphase flow dynamics, which require an improved understanding of the mechanisms responsible for rheological changes in non-Newtonian multiphase slurries (NNMS). To discuss the issues in predicting the behavior of NNMS, the workshop focused on two topic areas: (1) State-of-the-art in non-Newtonian Multiphase Slurry Flow, and (2) Scaling up with Confidence and Ensuring Safe and Reliable Long-Term Operation.

This book bridges the gap between the theoretical work of the rheologist, and the practical needs of those who have to design and operate the systems in which these materials are handled or processed. It is an established and important reference for senior level mechanical engineers, chemical and process engineers, as well as any engineer or scientist who needs to study or work with these fluids, including pharmaceutical engineers, mineral processing engineers, medical researchers, water and civil engineers. This new edition covers a considerably broader range of topics than its predecessor, including computational fluid dynamics modelling techniques, liquid/solid flows and applications to areas such as food processing, among others. Written by two of the world's leading experts, this is the only dedicated non-Newtonian flow reference in print. Since first publication significant advances have been made in almost all areas covered in this book, which are incorporated in the new edition, including developments in CFD and computational techniques, velocity profiles in pipes, liquid/solid flows and applications to food processing, and new heat/mass transfer methods and models. Covers both basic rheology and the fluid mechanics of NN fluids - a truly self-contained reference for anyone studying or working with the processing and handling of fluids

Aqueous Slurries of Coal and Granular Materials

Piping Design Handbook

Gas Holdup and Axial Solid Distribution in a Slurry Bubble Column with Non-Newtonian Fluids

Plant Flow Measurement and Control Handbook

Dossier on Cryptolaemus Montrouzieri (mulsant ; Coccinellidae ; Scymninae) ...

Particle technology is a term used to refer to the science and technology related to the handling and processing of particles and powders. The production of particulate materials, with controlled properties tailored to subsequent processing and applications, is of major interest to a wide range of industries, including chemical and process, food, pharmaceuticals, minerals and metals companies and the handling of particles in gas and liquid solutions is a key technological step in chemical engineering. This textbook provides an excellent introduction to particle technology with worked examples and exercises. Based on feedback from students and practitioners worldwide, it has been newly edited and contains new chapters on slurry transport, colloids and fine particles, size enlargement and the health effects of fine powders. Topics covered include: Characterization (Size Analysis) Processing (Granulation, Fluidization) Particle Formation (Granulation, Size Reduction) Storage and Transport (Hopper Design, Pneumatic Conveying, Standpipes, Slurry Flow) Separation (Filtration, Settling, Cyclones) Safety (Fire and Explosion Hazards, Health Hazards) Engineering the Properties of Particulate Systems (Colloids, Respirable Drugs, Slurry Rheology)

This book is essential reading for undergraduate students of chemical engineering on particle technology courses. It is also valuable supplementary reading for students in other branches of engineering, applied chemistry, physics, pharmaceutics, mineral processing and metallurgy. Practitioners in industries in which powders are handled and processed may find it a useful starting point for gaining an understanding of the behavior of particles and powders. Review of the First Edition taken from High Temperatures - High pressures 1999 31 243 - 251 "..This is a modern textbook that presents clear-cut knowledge. It can be successfully used both for teaching particle technology at universities and for individual study of engineering problems in powder processing."

This specification, and the appended notes for guidance, has been compiled to be used where slurry trench cut-off walls are required to act as barriers to pollution migration. It provides a standard and consistent approach to the design, construction, testing and monitoring of cut-off walls, guidance on the appropriateness of this technique and current best practice.

Discover the cutting-edge in multiphase flows used in the process industries In Multiphase Flows for Process Industries: Fundamentals and Applications, a team of accomplished chemical engineers delivers an insightful and complete treatment of the state-of-the-art in commonly encountered multiphase flows in the process industries. After discussing the theoretical background, experimental methods, and computational methods applicable to multiphase flows, the authors explore specific examples from the process industries. The book covers a wide range of multiphase flows, including gas-solid fluidized beds and flows with phase change. It also provides direction on how to use current advances in the field to realize efficient and optimized processes. Filling the gap between theory and practice, this unique reference also includes: A thorough introduction to multiphase flows and the process industry Practical discussions of flow regimes, lower order models and correlations, and the chronological development of mathematical models for multiphase flows Comprehensive explorations of experimental methods for characterizing multiphase flows, including flow imaging and visualization In-depth examinations of computational models for simulating multiphase flows Perfect for chemical and process engineers, Multiphase Flows for Process Industries: Fundamentals and Applications is required reading for graduate and doctoral students in the engineering sciences, as well as professionals in the chemical industry.

Recent Advances and Future Trends : Proceedings of a Conference Honouring Professor P. C. Kapur on His 60th Birthday, Indian Institute of Technology, Kanpur, December 11-15, 1995

Technical Report on NETL's Non Newtonian Multiphase Slurry Workshop

Multiphase Flows for Process Industries

Preparation and Handling of Magnesium-hydrocarbon Slurries for Jet-engine Applications

Slurry Transport Using Centrifugal Pumps

Using high concentration biomass slurry is a promising approach to improve the process of producing renewable energy, ethanol. Challenges of mixing such biomass slurry occur as the solid concentration increases. High concentration biomass slurry behaves like a Herschel-Bulkley fluid, exhibiting a combination of yield stress and power law behavior. It is important to obtain enough fluid property and impeller behavior data for designing high concentration biomass slurry agitators. This study focused on measuring the yield stress of high concentration biomass slurry and the impeller power number-Reynolds number relation when mixing such high concentration biomass. Using the vane method, the measured yield stress of seventeen percent biomass slurry (sawdust slurry) was found to be 300 Pascal, which is consistent with Stickel et al. (2009). The yield stresses obtained in the laboratory mixer were more consistent than those obtained in the Haake viscometer. For repeated measurement in the laboratory mixer, the coefficient of variation was less than ten percent, while in the Haake viscometer the coefficient of variation was more than twenty percent for repeated tests with the same sample and more than fifty percent for tests with different samples. The studied impellers include axial flow (HE-3), radial flow (D-6, S-4 and S-series with different number of blades) and mixed flow (P-4). The impeller behaviors in high concentration biomass slurry were much different than in turbulent operation in Newtonian fluid (water). At similar rotational speed, the radial flow impellers had lower impeller power number in biomass slurry than in Newtonian fluid, while the axial flow impeller had higher power number in biomass slurry than in Newtonian fluid. And mixed flow impeller power number in biomass slurry was close to that in Newtonian fluid. Power number is a function of Reynolds number, but the difficulty of measuring the apparent viscosity of biomass slurry makes it challenging to determine the Reynolds number in this study. The Metzner-Otto relationship, which is widely used for non-Newtonian fluids, was chosen to calculate the Reynolds number of biomass slurry. By comparing the impeller power number-Reynolds number relation in non-Newtonian biomass slurry with that in Newtonian fluid of Bates et al. (1966), the observed impeller data indicates that mixing high concentration biomass slurry happened in transitional regime. For D-6 impeller, a lower power number in non-Newtonian fluid than that in Newtonian fluid was observed at similar Reynolds number range in this study, which appears to be a common phenomenon in transitional regime as reported by Metzner et al. (1961). For the S-4 impeller, a lower power number in non-Newtonian fluid than that in Newtonian fluid was also observed at similar Reynolds number. For the axial flow impeller (HE-3) and mixed flow (P-4) impeller, power number in non-Newtonian fluid kept slowly decreasing with increasing Reynolds number, and was similar to the turbulent power number in Newtonian fluid. Metzner-Otto approach (r'=kN) is widely used to calculate the non-Newtonian fluid Reynolds number, where k = 11 was used in many studies. In this paper, k=11 underestimated the Reynolds number of biomass slurry while a k-value of 1000 overestimated the Reynolds number. A k-value of 100 appears to be the best. The concentration of biomass slurry in this paper is seventeen percent by weight. More work needs to be done to validate the k-value and to measure the yield stress when mixing different concentration biomass slurries.

The WTP pipe plugging issue, as stated by the External Flowsheet Review Team (EFRT) Executive Summary, is as follows: "Piping that transports slurries will plug unless it is properly designed to minimize this risk. This design approach has not been followed consistently, which will lead to frequent shutdowns due to line plugging." A strategy was employed to perform critical-velocity tests on several physical simulants. Critical velocity is defined as the point where a stationary bed of particles deposits on the bottom of a straight horizontal pipe during slurry transport operations. Results from the critical velocity testing provide an indication of slurry stability as a function of fluid rheological properties and transport conditions. The experimental results are compared to the WTP design guide on slurry transport velocity in an effort to confirm minimum waste velocity and flushing velocity requirements as established by calculations and critical line velocity correlations in the design guide. The major findings of this testing is discussed below. Experimental results indicate that the use of the Oroskar and Turian (1980) correlation in the design guide is conservative--Slurry viscosity has a greater affect on particles with a large surface area to mass ratio. The increased viscous forces on these particles result in a decrease in predicted critical velocities from this traditional industry derived equations that focus on particles large than 100 [mu]m in size. Since the Hanford slurry particles generally have large surface area to mass ratios, the reliance on such equations in the Hall (2006) design guide is conservative. Additionally, the use of the 95% percentile particle size as an input to this equation is conservative. However, test results indicate that the use of an average particle density as an input to the equation is not conservative. Particle density has a large influence on the overall result returned by the correlation. Lastly, the viscosity correlation used in the WTP design guide has been shown to be inaccurate for Hanford waste feed materials. The use of the Thomas (1979) correlation in the design guide is not conservative--In cases where 100% of the particles are smaller than 74 [mu]m or particles are considered to be homogeneous due to yield stress forces suspending the particles the homogeneous fraction of the slurry can be set to 100%. In such cases, the predicted critical velocity based on the conservative Oroskar and Turian (1980) correlation is reduced to zero and the design guide returns a value from the Thomas (1979) correlation. The measured data in this report show that the Thomas (1979) correlation predictions often fall below that measured experimental values. A non-Newtonian deposition velocity design guide should be developed for the WTP-- Since the WTP design guide is limited to Newtonian fluids and the WTP expects to process large quantities of such materials, the existing design guide should be modified address such systems. A central experimental finding of this testing is that the flow velocity required to reach turbulent flow increases with slurry rheological properties due to viscous forces dampening the formation of turbulent eddies. The flow becomes dominated by viscous forces rather than turbulent eddies. Since the turbulent eddies necessary for particle transport are not present, the particles will settle when crossing this boundary called the transitional deposition boundary. This deposition mechanism should be expected and designed for in the WTP.

You need this book for your CBT preparation! The PE Environmental CBT exam is NOT open book. You will only be allowed to use the NCEES supplied electronic reference on the exam. Ensure exam day success with the new PE Environmental Review from Michael R. Lindeburg, PE. PE Environmental Review offers the complete review for the new NCEES Environmental PE CBT exam. This book is the most up-to-date, comprehensive reference manual available, and is designed to the exact order of the exam. Topics Covered Water: Principles, Wastewater, Stormwater, Potable Water, Water Resources Air: Principles, Pollution Control Solid and Hazardous Waste: Principles, Municipal and Industrial Solid Waste, Hazardous, Medical, and Radioactive Waste Site Assessment and Remediation Environmental Health and Safety Associated Engineering Principles About the Exam The NCEES PE Environmental CBT Exam is a 9-hour computer-based exam. It is closed book with an electronic reference. Examinees have 9 hours to complete the 80 question exam. The 9-hour time includes a tutorial and optional break. This exam uses both the International System of units (SI) and the US Customary System (USCS). Key Features: Easy to find content organized in same order as the exam Use of NCEES Handbook equations, tables, and figures Teaching of how to solve exam problems with specific NCEES Handbook equations Industry-standard terminology and nomenclature Equal support of U.S. customary and SI units Binding: Paperback Publisher: PPI, A Kaplan Company After you Pass Your PE Environmental Review will serve as an invaluable reference throughout your environmental engineering career.

Publication de la Chambre Syndicale de la Recherche et de la Production du Pétrole et du Gaz Naturel

Bioprocess Engineering Principles

An Approach to Understanding Cohesive Slurry Settling, Mobilization, and Hydrogen Gas Retention in Pulsed Jet Mixed Vessels

Prerefining Pig Iron with a Vortex Cone

Flow Properties of Powdered Coal-water Slurries

"Written by engineers for engineers (with over 150 International Editorial Advisory Board members),this highly lauded resource provides up-to-the-minute information on the chemical processes, methods, practices, products, and standards in the chemical, and related, industries. "

Plant Flow Measurement and Control Handbook is a comprehensive reference source for practicing engineers in the field of instrumentation and controls. It covers many practical topics, such as installation, maintenance and potential issues, giving an overview of available techniques, along with recommendations for application. In addition, it covers available flow sensors, such as automation and control. The author brings his 35 years of experience in working in instrumentation and control within the industry to this title with a focus on fluid flow measurement, its importance in plant design and the appropriate control of processes. The book provides a good balance between practical issues and theory and is fully supported with industry case studies and a high level of illustrations to assist learning. It is unique in its coverage of multiphase flow, solid flow, process connection to the plant, flow computation and control. Readers will not only further understand design, but they will also further comprehend integration tactics that can be applied to the plant through a step-by-step design process that goes from installation to operation. Provides specification sheets, engineering drawings, calibration procedures and installation practices for each type of measurement Presents the correct flow meter that is suitable for a particular application Includes a selection table and step-by-step guide to help users make the best decision Cover examples and applications from engineering practice that will aid in understanding and application

The MIT mission - "to bring together Industry and Academia and to nurture the next generation in computational mechanics is of great importance to reach the new level of mathematical modeling and numerical solution and to provide an exciting research environment for the next generation in computational mechanics." Mathematical modeling and numerical solution is today firmly established in science and engineering. Research conducted in almost all branches of scientific investigations and the design of systems in practically all disciplines of engineering can not be pursued effectively without, frequently, intensive analysis based on numerical computations. The world we live in has been classified by the human mind, for descriptive and analysis purposes, to consist of fluids and solids, continua and molecules; and the analyses of fluids and solids at the continuum and molecular scales have traditionally been pursued separately. Fundamentally, however, there are only molecules and particles for any material that interact on the microscopic and macroscopic scales. Therefore, to unify the analysis of physical systems and to reach a deeper understanding of the behavior of nature in scientific investigations, and of the behavior of designs in engineering endeavors, a new level of analysis is necessary. This new level of mathematical modeling and numerical solution does not merely involve the analysis of a single medium but must encompass the solution of multi-physics problems involving fluids, solids, and their interactions, involving multi-scale phenomena from the molecular to the macroscopic scales, and must include uncertainties in the given data and the solution results. Nature does not distinguish between fluids and solids and does not ever repeat itself exactly. This new level of analysis must also include, in engineering, the effective optimization of systems, and the modeling and analysis of complete life spans of engineering products, from design to fabrication, to possibly multiple repairs, to end of service.

Volume 36 - Phosphorus to Pipeline Failure: Subsidence Strains

Introduction to Practical Fluid Flow

Ludwig's Applied Process Design for Chemical and Petrochemical Plants

Specification for the Construction of Slurry Trench Cut-off Walls as Barriers to Pollution Migration

TID

Deposition Velocities of Newtonian and Non-Newtonian Slurries in Pipelines

1,1 Applications of Slurry Transport Vast tonnages are pumped every year in the form of solid-liquid mixtures, known as slurries. The application which involves the largest quantities is the dredging industry, continually maintaining navigation in harbours and rivers, altering coastlines and winning material for landfill and construction purposes. As a single dredge may be required to maintain a throughput of 7000 tonnes of slurry per hour or more, very large centrifugal pumps are used. Figures 1-1 and 1-2 show, respectively, an exterior view of this type of pump, and a view of a large dredge-pump impeller (Addie & Helmley, 1989). The manufacture of fertiliser is another process involving massive slur- transport operations. Li Florida, phosphate matrix is recovered by huge draglines in open-pit mining operations. It is then slurried, and pumped to the wash plants through pipelines with a typical length of about 10 kilometres. Each year some 34 million tonnes of matrix are transported in this manner. This industry employs centrifugal pumps that are generally smaller than those used in large dredges, but impeller diameters up to 1. 4 m are common, and drive capacity is often in excess of 1000 kW. The transport distance is typically longer than for dredging applications, and Chapter 1 Figure LI. Testing a dredge pump at the GIW Hydraulic Laboratory Figure 1. 2. Impeller for large dredge pump 1. Introduction 3 hence a series of pumping stations is often used. Figure 1-3 shows a boost- pump installation in a phosphate pipeline.

Introduction to Practical Fluid Flow provides essential information on the the solution of practical fluid flow and fluid transportation problems through the application of fluid dynamics. Emphasising the solution of practical operating and design problems using the latest methods, the text concentrates on computer-based methods throughout, in keeping with modern trends in engineering. With a focus on the flow of slurries and non-Newtonian fluids, it will be useful for and engineering students who have to deal with practical fluid flow problems. The book is supported by an accompanying CD ROM which provides a toolbox of computer methods. These enable readers to use all of the problem solving methods shown in the book's illustrated examples. Emphasises flow of slurries and Non-Newtonian fluids. Covers the application of fluid dynamics to the solution of practical fluid flow and fluid transportation problems.

Turbulent Flow of Aggregate Particles in Slurry Fluids

Fundamentals and Applications

Report of Investigations

The Physics of Non-Newtonian Liquid Slurry Atomization

Fluid, Solid, Slurry and Multiphase Flow

This book benefits users, manufacturers and engineers by drawing together an overall view of the technology. It attempts to give the reader an appreciation of the extent to which slurry transport is presently employed, the theoretical basis for pipeline design, the practicalities of design and new developments.

This welcome new edition covers bioprocess engineering principles for the reader with a limited engineering background. It explains process analysis from an engineering point of view, using worked examples and problems that relate to biological systems. Application of engineering concepts is illustrated in areas of modern biotechnology such as recombinant protein production, bioremediation, biofuels, drug development, and tissue engineering, as well as microbial fermentation. The main sub-disciplines within the engineering curriculum are all covered; Material and Energy Balances, Transport Processes, Reactions and Reactor Engineering. With new and expanded material, Doran's textbook remains the book of choice for students seeking to move into bioprocess engineering. NEW TO THIS EDITION: All chapters thoroughly revised for current developments, with over 200 pgs of new material, including significant new content in: Metabolic Engineering Sustainable Bioprocessing Membrane Filtration Turbulence and Impeller Design Downstream Processing Oxygen Transfer Systems Over 150 new problems and worked examples More than 100 new illustrations New to this edition: All chapters thoroughly revised for current developments, with over 200 pgs of new material, including significant new content in: Metabolic Engineering Sustainable Bioprocessing Membrane Filtration Turbulence and Impeller Design Downstream Processing Oxygen Transfer Systems Over 150 new problems and worked examples More than 100 new illustrations

The Hanford Waste Treatment and Immobilization Plant (WTP) is being designed and built to pretreat and vitrify a large portion of the waste in Hanford's 177 underground waste storage tanks. Numerous process vessels will hold waste at various stages in the WTP. Some of these vessels have mixing-system requirements to maintain conditions where the accumulation of hydrogen gas stays below acceptable limits, and the mixing within the vessels is sufficient to release hydrogen gas under normal conditions and during off-normal events. Some of the WTP process streams are slurries of solid particles suspended in Newtonian fluids that behave as non-Newtonian slurries, such as Bingham yield-stress fluids. When these slurries are contained in the process vessels, the particles can settle and become progressively more concentrated toward the bottom of the vessels, depending on the effectiveness of the mixing system. One limiting behavior is a settled layer beneath a particle-free liquid layer. The settled layer, or any region with sufficiently high solids concentration, will exhibit non-Newtonian rheology where it is possible for the settled slurry to behave as a soft solid with a yield stress. In this report, these slurries are described as settling cohesive slurries.

PPI PE Environmental Review eText - 1 Year

A Study of Diffusivity Into Non-Newtonian Slurries

Multiphase Flow Handbook

Design of Slurry Transport Systems

Encyclopedia of Chemical Processing and Design

This encyclopedic volume covers almost every phase of piping design - presenting procedures in a straightforward way.;Written by 82 world experts in the field, the Piping Design Handbook: details the basic principles of piping design; explores pipeline shortcut methods in an in-depth manner; and presents expanded rules of thumb for the piping design engineer.;Generously illustrated with over 1575 figures, display equations, and tables, the Piping Design Handbook is for chemical, mechanical, process, and equipment design engineers.

Non-Newtonian (non-linear) fluids are common in nature, for example, in mud and honey, but also in many chemical, biological, food, pharmaceutical, and personal care processing industries. This Special Issue of Fluids is dedicated to the recent advances in the mathematical and physical modeling of non-linear fluids with industrial applications, especially those concerned with CFD studies. These fluids include traditional non-Newtonian fluid models, electro- or magneto-rheological fluids, granular materials, slurries, drilling fluids, polymers, blood and other biofluids, mixtures of fluids and particles, etc.

Drilling Mud and Cement Slurry Rheology Manual

Non-Newtonian Flow and Applied Rheology

Powder Mixing

Heat Transfer Coefficients of Non-Newtonian Slurries in Laminar Flow