

Grinnell Piping Design And Engineering

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.

Following the success of his first volume related to Hydraulics, Pipe Flow, Industrial HVAC & Utility Systems, Mister Mech Mentor, Volume 2 now offers an all-new, easy-to-read collection of chapters featuring ASME Piping & Pressure Vessel Code applications. Written in a friendly style, this book provides the essential benefits of instruction by a personal mentor who explains "why" and "how" while teaching potentially dangerous lessons in physics and engineering design. Spared the embarrassment of painful mistakes, both early-career and experienced engineers will gain practical knowledge from frank, colorful cases and learn to solve a variety of mechanical problems, including: - Pipe Stress & Strain - Structural Supports - Pressure Vessels - Jacketed Pipes - Bellows-Type Expansion Joints - Process Piping Introductory technical guidance for mechanical, electrical and civil engineers interested in cogeneration electric power plants. Here is what is discussed: 1. DEFINITION 2. CYCLES 3. EFFICIENCY 4. METHODS OF OPERATION 5. INTERCONNECTION WITH UTILITY 6. ECONOMICS 7. REFERENCES.

* Useful to engineers in any industry * Extensive references provided throughout * Comprehensive range of topics covered * Written with practical situations in mind A plant engineer is responsible for a wide range of industrial activities, and may work in any industry. The breadth of knowledge required by such professionals is so wide that previous books addressing plant engineering have either been limited to certain subjects or cursory in their treatment of topics. The Plant Engineer's Reference Book is the first volume to offer complete coverage of subjects of interest to the plant engineer. This reference work provides a primary source of information for the plant engineer. Subjects include selection of a suitable site for a factory and provision of basic facilities (including boilers, electrical systems, water, HVAC systems, pumping systems and floors and finishes). Detailed chapters deal with basic issues such as lubrication, corrosion, energy conservation, maintenance and materials handling as well as environmental considerations, insurance matters and financial concerns. The authors chosen to contribute to the book are experts in their various fields. The Editor has experience of a wide range of operations in the UK, other European countries, the USA, and elsewhere in the world. Produced with the backing of the Institution of Plant Engineers, this work is the primary source of information for plant engineers in any industry worldwide.

Taking a big-picture approach, Piping and Pipeline Engineering: Design, Construction, Maintenance, Integrity, and Repair elucidates the fundamental steps to any successful piping and pipeline engineering project, whether it is routine maintenance or a new multi-million dollar project. The author explores the qualitative details, calculations, and techniques that are essential in supporting competent decisions. He pairs coverage of real world practice with the underlying technical principles in materials, design, construction, inspection, testing, and maintenance. Discover the seven essential principles that will help establish a balance between production, cost, safety, and integrity of piping systems and pipelines The book includes coverage of codes and standards, design analysis, welding and inspection, corrosion mechanisms, fitness-for-service and failure analysis, and an overview of valve selection and application. It features the technical basis of piping and pipeline code design rules for normal operating conditions and occasional loads and addresses the fundamental principles of materials, design, fabrication, testing and corrosion, and their effect on system integrity. Originating as a set of lecture notes for a piping design & analysis workshop, this comprehensive, state-of-the-art reference is the only guide of its kind in print today providing broad coverage of pipe stress & supports engineering. Full of practical 'how-to' information, the book is detailed enough for the seasoned professional, yet easy enough for the novice to understand. In it, the design criteria, codes, standards, & regulations are explained for power piping, fuel gas piping, chemical plant & refining piping, liquid petroleum transportation piping systems, refrigeration piping, gas transmission & distribution piping, building service piping, & nuclear power piping. Clear, thorough, & up-to-date, this text is required reading for all professionals & students in this rapidly changing field.

Piping and Pipeline Calculations Manual, Second Edition provides engineers and designers with a quick reference guide to calculations, codes, and standards applicable to piping systems. The book considers in one handy reference the multitude of pipes, flanges, supports, gaskets, bolts, valves, strainers, flexibles, and expansion joints that make up these often complex systems. It uses hundreds of calculations and examples based on the author's 40 years of experiences as both an engineer and instructor. Each example demonstrates how the code and standard has been correctly and incorrectly applied. Aside from advising on the intent of codes and standards, the book provides advice on compliance. Readers will come away with a clear understanding of how piping systems fail and what the code requires the designer, manufacturer, fabricator, supplier, erector, examiner, inspector, and owner to do to prevent such failures. The book enhances participants' understanding and application of the spirit of the code or standard and form a plan for compliance. The book covers American Water Works Association standards where they are applicable. Updates to major codes and standards such as ASME B31.1 and B31.12 New methods for calculating stress intensification factor (SIF) and seismic activities Risk-based analysis based on API 579, and B31-G Covers the Pipeline Safety Act and the creation of PhMSA Here is the ultimate reference for ascertaining the functionality and remaining life of industrial process equipment. Packed with graphs, figures, photos, and checklists, this edition of An Introduction to Machinery Reliability Assessment is the most approachable and useful book on this topic. This single volume contains dozens of assessment techniques based on probability and statistical analysis. Theoretical and practical contexts are given for the various methods, which include

failure mode and effect analysis, risk and hazard assessment, fault tree analysis, Weibull analysis, and field reliability assessment. The second edition now contains expanded treatments of turbomachinery (particularly centrifugal pumps), Weibull analysis techniques, and equipment safety checklists. Most importantly, it includes a new chapter focusing on mechanical structures and piping. New appendixes on safety design checklists and installation reviews and an updated glossary enhance the book's utility and practical application, making it a complete single source of machinery reliability assessment techniques.

With this collection of chapters written in a friendly style, you enjoy the essential benefits of instruction by a personal mentor who explains "why" and "how" while teaching potentially dangerous lessons in physics and engineering design. Spared the embarrassment of painful mistakes, you gain practical knowledge from frank, colorful cases and learn to solve mechanical problems related to hydraulics, pipe flow, and industrial HVAC and utility systems. Water and Steam Hammer Phenomena - Gravity Flow of Liquids in Pipes - Siphon Seals and Water Legs - Regulating Steam Pressure Drop - Industrial Risk Insurers' Fuel Gas Burner Piping Valve Train - Controlling Differential Air Pressure of a Room with Respect to its Surroundings - Water Chiller Decoupled Primary-Secondary Loops - Pressure Drop Calculations of Incompressible Fluid Flow in Piping and Ducts - Water Chillers in Turndown - Hydraulic Loops - Radiation Heat Transfer - Thermal Insulation

The Watts Bar Steam Plant is the first fuel-burning electric power plant constructed by the TVA. The first two of its four 60,000-kilowatt generating units were placed in commercial operation in February and March 1942 at a time when the products of industry and agriculture in the valley region were critical items in the war effort. These units increased the continuous energy capacity of the TVA system to approximately 830,000 kilowatts and the system peak to about 1,100,000 kilowatts. The further addition of Cherokee, Chatuge, and Nottely Dams and the down-river units raised the continuous energy of the system to 960,000 kilowatts and the peak capability to about 1,300,000 kilowatts by the fall of 1942. The third Watts Bar Steam Plant unit began operation in February 1943 and the fourth in April 1945 - important factors in keeping ahead of system demands.

Piping Design and Engineering Piping and Pipeline Engineering Design, Construction, Maintenance, Integrity, and Repair CRC Press

"Piping Design and Engineering" first published in 1963 by Grinnell, Co. is widely used by engineers to perform approximate thermal stress analysis of high-temperature piping systems. The text consists of numerical constants to calculate end reactions and maximum bending stresses in a variety of piping configurations from known properties of pipes such as outside diameter and moment of inertia, material properties such as Modulus of Elasticity and Coefficient of Linear Expansion and specific properties of the configurations such as aspect ratio (length/height) and temperature differential. The results obtained by using formulae from the text are close to the ones obtained by the use of finite element computer programs. However, the text has some limitations. It lacks theoretical bases from which the numerical constants were derived. Thus, the text cannot be used to analyze piping configurations with aspect ratios outside the range listed in the text. The text also limits itself to piping configurations without intermediate restraints. The following thesis investigates three most common configurations, viz., L, U, and Z, and determines theoretical basis and general equations which yield numerical constants identical to the ones given in the above text. It also describes how similar methods can be used to analyze piping systems with intermediate restraints. A numerical check of data thus derived along with the methods and the data to analyze deadweight and seismic stresses in the piping configurations is also included. Solve any mechanical engineering problem quickly and easily This trusted compendium of calculation methods delivers fast, accurate solutions to the toughest day-to-day mechanical engineering problems. You will find numbered, step-by-step procedures for solving specific problems together with worked-out examples that give numerical results for the calculation. Covers: Power Generation; Plant and Facilities Engineering; Environmental Control; Design Engineering New Edition features methods for automatic and digital control; alternative and renewable energy sources; plastics in engineering design

"Steam Reforming, Operating Experience to Storage Tank Measurement, Optical Method"

With the help of this guide to calculation methods, you can solve any mechanical engineering problem quickly and easily. You'll get step-by-step methods for solving thousands of problems together with worked-out examples that give the results for the calculations...logical organization for accessibility under the headings of power generation, plant and facilities, environmental control, and design engineering...and special coverage of software design validation, steam generation, environmental issues, gas turbine systems, and indoor energy conservation.

Includes Part 1, Number 2: Books and Pamphlets, Including Serials and Contributions to Periodicals July - December)

Now substantially revised and improved, this invaluable handbook provides engineers and technicians with more than 5,000 direct and related calculations for solving day-to-day problems quickly and easily. The book covers 13 disciplines--including civil, architectural, mechanical, electrical, electronics, control, marine, and nuclear engineering--enabling readers to become familiar with procedures in fields apart from their own. The third edition features a major new section on environmental engineering, plus increased emphasis on environmental factors in the other 12 disciplines.

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