

Detail Engineering And Layout Of Piping Systems

Process Plant Layout, Second Edition, explains the methodologies used by professional designers to layout process equipment and pipework, plots, plants, sites, and their corresponding environmental features in a safe, economical way. It is supported with tables of separation distances, rules of thumb, and codes of practice and standards. The book includes more than seventy-five case studies on what can go wrong when layout is not properly considered. Sean Moran has thoroughly rewritten and re-illustrated this book to reflect advances in technology and best practices, for example, changes in how designers balance layout density with cost, operability, and safety considerations. The content covers the ‘why’ underlying process design company guidelines, providing a firm foundation for career growth for process design engineers. It is ideal for process plant designers in contracting, consultancy, and for operating companies at all stages of their careers, and is also of importance for operations and maintenance staff involved with a new build, guiding them through plot plan reviews. Based on interviews with over 200 professional process plant designers Explains multiple plant layout methodologies used by professional process engineers, piping engineers, and process architects Includes advice on how to choose and use the latest CAD tools for plant layout Ensures that all methodologies integrate to comply with worldwide risk management legislation

This volume addresses the fundamentals of planning, designing, fabricating, testing and operating space systems. It is intended as an engineering reference and as a textbook for an advanced undergraduate or graduate level course.

Engineering Design, Planning and Management, Second Edition represents a compilation of essential resources, methods, materials and knowledge developed by the author and used over two decades. The book covers engineering design methodology through an interdisciplinary approach, with concise discussions and a visual format. It explores project management and creative design in the context of both established companies and entrepreneurial start-ups. Readers will discover the usefulness of the design process model through practical examples and applications from across engineering disciplines. Sections explain useful design techniques, including concept mapping and weighted decision matrices that are supported with extensive graphics, flowcharts and accompanying interactive templates. Discussions are organized around 12 chapters dealing with topics such design concepts and embodiments, decision-making, finance, budgets, purchasing, bidding, communication, meetings and presentations, reliability and system design, manufacturing design and mechanical design. Covers all steps in the design process Includes several chapters on project management, budgeting and teamwork, providing sufficient background to help readers effectively work with time and budget constraints Provides flowcharts, checklists and other templates that are useful for implementing successful design methods Presents examples and applications from several different engineering fields to show the general usefulness of the design process model

The New 3D Layout for Oil & Gas Offshore Projects

Engineering Design, Planning, and Management

Practical Techniques for Groundwater & Soil Remediation

Computer-Aided Engineering Design

Journal of the Technical Association of the Australian and New Zealand Pulp and Paper Industry

Fundamentals of Space Systems

Practical Techniques for Groundwater and Soil Remediation is a compilation of articles by the author that were printed in the National Ground Water Association (NGWA) magazine Groundwater Monitoring Review. The book provides valuable data, emphasizes the practical aspects of remediation, presents results from actual remediation programs, and helps readers prepare remediation strategies. The book also includes detailed technical data on treatment equipment performance and the costs associated with their design and operation. A unique feature of the book is that it also contains data from treatment systems that did not work. Practical Techniques for Groundwater and Soil Remediation is a "must have" source of invaluable data and tips that will be useful for all groundwater and soil remediation professionals.

Principles of Engineering Design discusses design applicability to machine systems, the nature and scope of technical processes, technical systems, machine systems, the human design engineer, the design process, and cases related to methods and procedures. The text deals with the structure, mode of action, properties, origination, development, and systematics of such technical systems. It analyzes the design process in terms of case problems, modelling, structure, representation, and working means. It also describes in detail the general model of a methodical procedure: separate design steps are treated in a unified fashion from different perspectives. The text notes that the tasks and methods of design research involve the following: (1) Components—determining structural elements in the design process; (2) Sequence—determining a general procedural model for the design process with a minimum of failures; (3) Modifications—what changes in factors affect the design process; and (5) Tactics—selection for individual design operations to obtain optimal results. A case study exemplifies the significant stages of design of a welding positioner. The book is highly recommended for students and the practicing design engineer in various fields.

This work outlines a state-of-the-art project control and trending programme, focusing on advanced applied-cost and schedule-control skills for all phases of a project at both owner and contractor level. It contains information on the three major aspects of the total project programme: the techniques and procedures utilized for a project; the experience and analytical ability of project personnel; and the commitment and teamwork of a project group.

Aircraft Layout and Detail Design

DETAIL ENGINEERING & LAYOUT OF

Appita Journal

Peterborough Residential Roads

Circuit Design, Layout, and Simulation

Hearing Before the Subcommittee on Irrigation and Reclamation, 89-1, on H.R. 4671 and Similar Bills, August 23-Sept. 1, 1965

Higher National Engineering 2nd Edition is a new edition of this extremely successful course book, covering the compulsory core units of the 2003 BTEC Higher National Engineering schemes. Full coverage is given of the common core units for HNC/D (units 1 – 3) for all pathways, as well as the two different Engineering Principles units (unit 5) for mechanical and electrical/electronic engineering, and the additional unit required at HND for these pathways (Engineering Design – unit 6). Students following the HNC and HND courses will find this book essential reading, as it covers the core material they will be following through the duration of their course. Knowledge-check questions and activities are included throughout, along with learning summaries, innovative 'Another View' features, and applied maths integrated alongside the appropriate areas of engineering studies. The result is a clear, straightforward and easily accessible text, which encourages independent study. Like the syllabus itself, this book is ideal for students progressing to HNC/HND from AVCE, as well as A-Level and BTEC National. The topics covered are also suitable reading for students following BTEC Foundation Degrees in Engineering/Technology, as well as Foundation Degrees in Engineering run by UK institutions nationwide.

James O. Pennock has compiled 45 years of personal experience into this how-to guide. Focusing on the position of "lead in charge," this book is an indispensable resource for anyone, new or seasoned veteran, whose job it is to lead the piping engineering and design of a project. The "lead" person is responsible for the successful execution of all piping engineering and design for a project, technical and non-technical aspects alike. The author defines the roles and responsibilities a lead will face and the differences found in various project types. Incorporates four decades of personal experience in a How-To guide Focuses on the position of "lead in charge" Includes coverage of topics often ignored in other books yet essential for success: management, administrative, and control responsibilities

Mechanical Design Engineering Handbook is a straight-talking and forward-thinking reference covering the design, specification, selection, use and integration of machine elements fundamental to a wide range of engineering applications. Develop or refresh your mechanical design skills in the areas of bearings, shafts, gears, seals, belts and chains, clutches and brakes, springs, fasteners, pneumatics and hydraulics, amongst other core mechanical elements, and dip in for principles, data and calculations as needed to inform and evaluate your on-the-job decisions. Covering the full spectrum of common mechanical and machine components that act as building blocks in the design of mechanical devices, Mechanical Design Engineering Handbook also includes worked design scenarios and essential background on design methodology to help you get started with a problem and repeat selection processes with successful results time and time again. This practical handbook will make an ideal shelf reference for those working in mechanical design across a variety of industries and a valuable learning resource for advanced students undertaking engineering design modules and projects as part of broader mechanical, aerospace, automotive and manufacturing programs. Clear, concise text explains key component technology, with step-by-step procedures, fully worked design scenarios, component images and cross-sectional line drawings all incorporated for ease of understanding Provides essential data, equations and interactive ancillaries, including calculation spreadsheets, to inform decision making, design evaluation and incorporation of components into overall designs Design procedures and methods covered include references to national and international standards where appropriate

An Applied Guide to Process and Plant Design

Progress in the Pharmaceutical and Food Processing Industry

Plant Engineering

Process Plant Layout

Mechanical Design Engineering Handbook

Containment Technology

This excellent book systematically identifies the issues surrounding the effective linking of project management techniques and engineering applications. It is not a technical manual, nor is it procedure-led. Instead, it encourages creative learning of project engineering methodology that can be applied and modified in different situations. In short, it offers a distillation of practical ‘on-the job’ experience to help project engineers perform more effectively. While this book specifically addresses process plants, the principles are applicable to other types of engineering project where multidisciplinary engineering skills are required, such as power plant and general factory construction. It focuses on the technical aspects, which typically influence the configuration of the plant as a whole, on the interface between the various disciplines involved, and the way in which work is done - the issues central to the co-ordination of the overall engineering effort. It develops an awareness of relationships with other parties - clients, suppliers, package contractors, and construction managers - and of how the structure and management of these relationships impact directly on the performance of the project engineer. Readers will welcome the author’s straightforward approach in tackling sensitive issues head on. COMPLETE CONTENTS Introduction A process plant A project and its management A brief overview The engineering work and its management The project’s industrial environment The commercial environment The contracting environment The economic environment Studies and proposals Plant layout and modelling Value engineering and plant optimization Hazards, loss, and safety Specification, selection and purchase Fluid transport Bulk solids transport Slurries and two-phase transport Hydraulic design and plant drainage Observations on multidiscipline engineering Detail design and drafting The organization of work Construction Construction contracts Commissioning Communication Change and chaos Fast-track projects Advanced information management Project strategy development Key issues summary

This book describes the fascinating wealth of activities as they occur in the design, construction and commissioning of a chemical plant - a jigsaw puzzle of the work of chemical engineers, chemists, constructors, architects, electrical engineers, process automation engineers, economists and legal staff. The author first takes the reader through the conceptual phase, in which the economic relevance and environmental impact need to be considered and supplemented by accurate estimates of capital requirements and profitability. This phase ends with the choice of an appropriate engineering firm and the conclusion of the contract, after which the reader is guided through all aspects of the implementation phase from the engineering of the chemical plant to commissioning, equipment and material procurement, the erection phase and the successful test run, after which the new facility is handed over to its owner. The book also illustrates many potential sources of errors by means of examples from practice, and how, aside professional skills, teamwork and communication are also absolutely essential to keep such a complex project on track.

When working on oil and gas offshore projects the 3D layout is one of the most essential parts according to Jacques Daubian, author and engineering and construction specialist. The objective of the company during the engineering and construction phases is to deliver the project on time and safely to the field operators and to ensure everything will be maintained safely, during the life of the offshore operations. All major oil and gas companies and contractors use 3D software for the design, layout, drawings and procurement of their projects. Each 3D model must be perfect during the detail engineering to be able to extract all the information necessary for the construction. The layout of offshore oil and gas projects start day one of the basic engineering and everything must be fixed before the completion of 50% of your detail engineering to avoid any engineering problems and delay during construction.The layout using 3D software is today an obligation. Jacques Daubian latest book The New 3D Layout for Oil & Gas Offshore Projects will aid projects struggling with their 3D model layouts as well as those simply looking for a new and more effective approach. The book includes a checklist, listed by discipline, of what must be done to ensure the success of your project. Jacques Daubian draws on personal experience within the engineering and construction industry to provide an informative and helpful guide. For 12 years Jacques Daubian examined the huge degradation of the layout aspect of offshore projects and has since re-evaluated this, as demonstrated in The New 3D Layout for Oil & Gas Offshore Projects.

Building Engineering and Systems Design

Effective Project Management Through Applied Cost and Schedule Control

Higher National Engineering

Lower Colorado River Basin Project

Engineering Manual for Military Construction

Topology Optimization in Engineering Structure Design

For more than 25 years, students have relied on this trusted text for easy-to-read, comprehensive drafting and design instruction that complies with the latest ANSI and ASME industry standards for mechanical drafting. The Sixth Edition of ENGINEERING DRAWING AND DESIGN continues this tradition of excellence with a multitude of real, high-quality industry drawings and more than 1,000 drafting, design, and practical application problems—including many new to the current edition. The text showcases actual product designs in all phases, from concept through manufacturing, marketing, and distribution. In addition, the engineering design process now features new material related to production practices that eliminate waste in all phases, and the authors describe practices to improve process output quality by using quality management methods to identify the causes of defects, remove them, and minimize manufacturing variables. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

This book covers the fundamental knowledge of layout design from the ground up, addressing both physical design, as generally applied to digital circuits, and analog layout. Such knowledge provides the critical awareness and insights a layout designer must possess to convert a structural description produced during circuit design into the physical layout used for IC/PCB fabrication. The book introduces the technological know-how to transform silicon into functional devices, to understand the technology for which a layout is targeted (Chap. 2). Using this core technology knowledge as the foundation, subsequent chapters delve deeper into specific constraints and aspects of physical design, such as interfaces, design rules and libraries (Chap. 3), design flows and models (Chap. 4), design steps (Chap. 5), analog design specifics (Chap. 6), and finally reliability measures (Chap. 7). Besides serving as a textbook for engineering students, this book is a foundational reference for today ’ s circuit designers.

Drawing on his own experience within the engineering and construction field, Jacques Daubian presents 3D Model Reviews Using Navisworks for Oil & Gas Offshore Projects; an informative and educational read for professionals working with 3D models and participating in 3D model reviews. The 3D model reviews are the particular moments during the project where the contractor and his client sit together to review the 3D model. This step is repeated a minimum of three times during a project and is imperative to the success of any oil and gas offshore project. It allows time for the client to make comments on the project thus far. Both the contractor and the client must spend time reviewing the 3D model and the participants must be qualified and efficient. 3D Model Reviews Using Navisworks for Oil & Gas Offshore Projects highlights the importance of the 3D model review stage in any project, reminding the reader to: — Avoid any delay during the construction — 90% of shop drawings will be extracted from your 3D model, for this reason the 3D model must be perfect — The cost of construction is a lot more important than the cost of engineering. You must spend time reviewing the 3D model — The goal is to safely deliver the project to the client field operation team. Jacques Daubian also draws on his experience to demonstrate why the software Navisworks will assist projects in having quick and efficient 3D model reviews, allowing for accurate comments and feedback. Jacques also explains how NavisWorks allows for the easy creation of graphic and text comments. This book is not for the general reader; it is written to inform and educate those working within the engineering industry, specifically those using 3D models, operating the 3D software and those participating in the reviews.

Part 1: Procedure: Part 2: Policy on Adoption: Part 3: Layout Considerations: Part 4: Engineering Specification and Standard Detail Drawings

Handbook for Process Plant Project Engineers

How to ensure success

Project Management from Inquiry to Acceptance

The Engineer’s Guide to Plant Layout and Piping Design for the Oil and Gas Industries

3D Model Reviews Using NavisWorks for Oil & Gas Offshore Projects

Concentrator Photovoltaics (CPV) is one of the most promising technologies to produce solar electricity at competitive prices. High performing CPV systems with efficiencies well over 30% and multi-megawatt CPV plants are now a reality. As a result of these achievements, the global CPV market is expected to grow dramatically over the next few years reaching cumulative installed capacity of 12.5 GW by 2020. In this context, both new and consolidated players are moving fast to gain a strategic advantage in this emerging market. Written with clear, brief and self-contained technical explanations, Handbook of Concentrator Photovoltaic Technology provides a complete overview of CPV covering: the fundamentals of solar radiation, solar cells, concentrator optics, modules and trackers; all aspects of characterization and reliability; case studies based on the description of actual systems and plants in the field; environmental impact, market potential and cost analysis. CPV technology is at a key point of expansion. This timely handbook aims to provide a comprehensive assessment of all CPV scientific, technological and engineering background with a view to equipping engineers and industry professionals with all of the vital information they need to help them sustain the impetus of this encouraging technology. Key features: Uniquely combines an explanation of the fundamentals of CPV systems and components with an overview of the market place and their real-life applications. Each chapter is written by well-known industry specialists with extensive expertise in each particular field of CPV technology. Reviews the basic concepts of multi-junction solar cells and new concepts for CPV cells, highlighting the key differences between them. Demonstrates the state of the art of several CPV centres and companies. Facilitates future cost calculation models for CPV. Features extensive case studies in each chapter, including coverage of CPV modules and systems.

The Third Edition of CMOS Circuit Design, Layout, and Simulation continues to cover the practical design of both analog and digital integrated circuits, offering a vital, contemporary view of a wide range of analog/digital circuit blocks including: phase-locked-loops, delta-sigma sensing circuits, voltage/current references, op-amps, the design of data converters, and much more. Regardless of one’s integrated circuit (IC) design skill level, this book allows readers to experience both the theory behind, and the hands-on implementation of, complementary metal oxide semiconductor (CMOS) IC design via detailed derivations, discussions, and hundreds of design, layout, and simulation examples.

Supplement to 3d ed. called Selected characteristics of occupations (physical demands, working conditions, training time) issued by Bureau of Employment Security.

Principles of Engineering Design

Micro Process Engineering
CMOS
Piping Engineering Leadership for Process Plant Projects

e-Design

The Engineer ' s Guide to Plant Layout and Piping Design for the Oil and Gas Industries gives pipeline engineers and plant managers a critical real-world reference to design, manage, and implement safe and effective plants and piping systems for today ' s operations. This book fills a training void with complete and practical understanding of the requirements and procedures for producing a safe, economical, operable and maintainable process facility. Easy to understand for the novice, this guide includes critical standards, newer designs, practical checklists and rules of thumb. Due to a lack of structured training in academic and technical institutions, engineers and pipe designers today may understand various computer software programs but lack the fundamental understanding and implementation of how to lay out process plants and run piping correctly in the oil and gas industry. Starting with basic terms, codes and basis for selection, the book focuses on each piece of equipment, such as pumps, towers, underground piping, pipe sizes and supports, then goes on to cover piping stress analysis and the daily needed calculations to use on the job. Delivers a practical guide to pipe supports, structures and hangers available in one go-to source Includes information on stress analysis basics, quick checks, pipe sizing and pressure drop Ensures compliance with the latest piping and plant layout codes and complies with worldwide risk management legislation and HSE Focuses on each piece of equipment, such as pumps, towers, underground piping, pipe sizes and supports Covers piping stress analysis and the daily needed calculations to use on the job

This book is about the Design and Engineering of Process Piping that are used in Industrial plans such as oil refineries, power plants and other process facilities. This is a very useful book for anyone in the industry.

Process Plant Layout, Second Edition, explains the methodologies used by professional designers to layout process equipment and pipework, plots, plants, sites, and their corresponding environmental features in a safe, economical way. It is supported with tables of separation distances, rules of thumb, and codes of practice and standards. The book includes more than seventy-five case studies on what can go wrong when layout is not properly considered. Sean Moran has thoroughly rewritten and re-illustrated this book to reflect advances in technology and best practices, for example, changes in how designers balance layout density with cost, operability, and safety considerations. The content covers the 'why' underlying process design company guidelines, providing a firm foundation for career growth for process design engineers. It is ideal for process plant designers in contracting, consultancy, and for operating companies at all stages of their careers, and is also of importance for operations and maintenance staff involved with a new build, guiding them through plot plan reviews. Based on interviews with over 200 professional process plant designers Explains multiple plant layout methodologies used by professional process engineers, piping engineers, and process architects Includes advice on how to choose and use the latest CAD tools for plant layout Ensures that all methodologies integrate to comply with worldwide risk management legislation

Fundamentals of Layout Design for Electronic Circuits

Export Control & Allocation Powers

Process Plant Design

MEM09204A Produce Basic Engineering Detail drawings

Handbook on Concentrator Photovoltaic Technology

Fossil Energy Research Program of the Energy Research and Development Administration

An Applied Guide to Process and Plant Design is a guide to process plant design for both students and professional engineers. The book covers plant layout and the use of spreadsheet programmes and key drawings produced by professional engineers as aids to design; subjects which are usually learned on the job rather than in education. You will learn how to produce smarter plant design through the use of computer tools, including Excel and AutoCAD, "What If Analysis", statistical tools, and Visual Basic for more complex problems. The book also includes a wealth of selection tables, covering the key aspects of professional plant design which engineering students and early-career engineers tend to find most challenging. Professor Moran draws on over 20 years' experience in process design to create an essential foundational book ideal for those who are new to process design, compliant with both professional practice and the IChemE degree accreditation guidelines. Explains how to deliver a process design that meets both business and safety criteria Covers plant layout and the use of spreadsheet programmes and key drawings as aids to design Includes a comprehensive set of selection tables, covering those aspects of professional plant design which early-career designers find most challenging This unit of competency covers the skills and knowledge required to identify drawing requirements, preparing engineering drawings and an engineering parts list, and issuing the drawings. Drawings include 2-D drawings to Australian Standard (AS) 1100.101-1992 Technical drawing - General principles. This unit is suitable for those working within a drafting work environment where most specifications required for the drawing are already determined. Specifications may be obtained from design information, customer requirements, sketches and preliminary layouts. Drawings will usually be carried out with the use of computer-aided design (CAD) systems but may also be done manually. Drawings are produced to AS 1100.101-1992 Technical drawing - General principles, from predetermined critical dimensions and specifications. A CD with exercise templates is available by contacting blakline@bigpond.net.au for \$10 plus postage.

DETAIL ENGINEERING & LAYOUT OFTitles on Demand

Export Control

Best Practice

Engineering Drawing and Design

Principles, Practice and Economics of Plant and Process Design

Sustainability in Engineering Design

Dictionary of Occupational Titles

Topology Optimization in Engineering Structure Design explores the recent advances and applications of topology optimization in engineering structures design, with a particular focus on aircraft and aerospace structural systems. To meet the increasingly complex engineering challenges provided by rapid developments in these industries, structural optimization techniques have developed in conjunction with them over the past two decades. The latest methods and theories to improve mechanical performances and save structural weight under static, dynamic and thermal loads are summarized and explained in detail here, in addition to potential applications of topology optimization techniques such as shape preserving design, smart structure design and additive manufacturing. These new design strategies are illustrated by a host of worked examples, which are inspired by real engineering situations, some of which have been applied to practical structure design with significant effects. Written from a forward-looking applied engineering perspective, the authors not only summarize the latest developments in this field of structure design but also provide both theoretical knowledge and a practical guideline. This book should appeal to graduate students, researchers and engineers, in detailing how to use topology optimization methods to improve product design. Combines practical applications and topology optimization methodologies Provides problems inspired by real engineering difficulties Designed to help researchers in universities acquire more engineering requirements e-Design is the first book to integrate discussion of computer design tools throughout the design process. Through this book, the reader will understand... Basic design principles and all-digital design paradigms. CAD/CAE/CAM tools available for various design related tasks. How to put an integrated system together to conduct All-Digital Design (ADD). Industrial practices in employing ADD and tools for product development. Provides a comprehensive and thorough coverage on essential elements for practicing all-digital design (ADD) Covers CAD/CAE methods throughout the design process, including solid modelling, performance simulation, reliability, manufacturing, cost estimates and rapid prototyping Discusses CAD/CAE/CAM/RP/CNC tools and data integration for support of the all-digital design process Reviews off-the-shelf tools for support of modelling, simulations, manufacturing, and product data management Provides tutorial type projects using ProENGINEER and SolidWorks for readers to exercise design examples and gain hands-on experience A series of running examples throughout the book illustrate the practical use of the ADD paradigm and tools

Part I: Process design -- Introduction to design -- Process flowsheet development -- Utilities and energy efficient design -- Process simulation -- Instrumentation and process control -- Materials of construction -- Capital cost estimating -- Estimating revenues and production costs -- Economic evaluation of projects -- Safety and loss prevention -- General site considerations -- Optimization in design --

Part II: Plant design -- Equipment selection, specification and design -- Design of pressure vessels -- Design of reactors and mixers -- Separation of fluids -- Separation columns (distillation, absorption and extraction) -- Specification and design of solids-handling equipment -- Heat transfer equipment -- Transport and storage of fluids.

Chemical Engineering Design

Part 15: Arctic and Subarctic Construction, Chapter 2: Site Selection and Development

Fundamentals, Devices, Fabrication, and Applications

Designed for use in engineering design courses, and as a reference for industry professionals learning sustainable design concepts and practical methods, Sustainability in Engineering Design focuses on designers as the driving force behind sustainable products. This book introduces sustainability concepts and explains the application of sustainable methods to the engineering design process. The book also covers important design topics such as project and team management, client management, performance prediction, and the social and environmental effects of sustainable engineering design. These concepts and methods are supported with a wealth of worked examples, discussion questions, and primary case studies to aid comprehension. Applies research-based methods to achieve real-world results for rapidly evolving industry trends Focuses on design engineers as the starting point of creating sustainable design Provides practical methods and design tools to guide engineering designers in creating sustainably designed and engineering products Incorporates all aspects of sustainable engineering design, including the material selection, production, and marketing of products Includes cutting-edge sustainable design model case studies based on the authors' own research and experiences This book covers all aspects of containment technology in depth and the latest developments in this exciting field are introduced. This book is a key publication to planning engineers, production managers and those interested in getting a picture of the different applications of the isolator technology. References on literature, laws, norms and guidelines will support the reader to become acquainted with the containment technology. This edition of 'Micro Process Engineering' was originally published in the successful series 'Advanced Micro & Nanosystems'. Authors from leading industrial players and research institutions present a concise and didactical introduction to Micro Process Engineering, the combination of microtechnology and process engineering into a most promising and powerful tool for revolutionizing chemical processes and industrial mass production of bulk materials, fine chemicals, pharmaceuticals and many other products. The book takes the readers from the fundamentals of engineering methods, transport processes, and fluid dynamics to device conception, simulation and modelling, control interfaces and issues of modularity and compatibility. Fabrication strategies and techniques are examined next, focused on the fabrication of suitable microcomponents from various materials such as metals, polymers, silicon, ceramics and glass. The book concludes with actual applications and operational aspects of micro process systems, giving broad coverage to industrial efforts in America, Europe and Asia as well as laboratory equipment and education.