1. Record Nr. UNINA9910144002903321

Autore	Ingham John, Dr.
Titolo	Chemical engineering dynamics : an introduction to modelling and computer simulation / / John Ingham, [and five others]
Pubbl/distr/stampa	Weinheim, Germany : , : Wiley-VCH GmbH, , [2007] ©2007
ISBN	1-281-23930-5 9786611239305 3-527-61421-4 3-527-61422-2
Edizione	[3rd, completely rev. ed.]
Descrizione fisica	1 online resource (643 p.)
Disciplina	660.28155362
Soggetti	Chemical engineering - Mathematical models
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Chemical Engineering Dynamics; Contents; Preface; Acknowledgements; Nomenclature for Chapters 1-4; 1 Basic Concepts; 1.1 Modelling Fundamentals; 1.1.1 Chemical Engineering Modelling; 1.1.2 General Aspects of the Modelling Approach; 1.1.3 General Modelling Procedure; 1.2 Formulation of Dynamic Models; 1.2.1 Material Balance Equations; 1.2.2 Balancing Procedures; 1.2.2.1 Case A: Continuous Stirred-Tank Reactor; 1.2.2.2 Case B: Tubular Reactor; 1.2.2.3 Case C: Coffee Percolator; 1.2.3 Total Material Balances; 1.2.3.1 Case A: Tank Drainage; 1.2.4 Component Balances 1.2.4.1 Case A: Waste Holding Tank1.2.4.2 Case B: Extraction from a Solid by a Solvent; 1.2.5 Energy Balancing; 1.2.5.1 Case A: Continuous Heating in an Agitated Tank; 1.2.5.2 Case B: Heating in a Filling Tank; 1.2.5.3 Case C: Parallel Reaction in a Semi-Continuous Reactor with Large Temperature Changes; 1.2.6 Momentum Balances; 1.2.7 Dimensionless Model Equations; 1.2.7.1 Case A: Continuous Stirred-Tank Reactor (CSTR); 1.2.7.2 Case B: Gas-Liquid Mass Transfer to a Continuous Tank Reactor with Chemical Reaction; 1.3 Chemical Kinetics; 1.3.1 Rate of Chemical Reaction 1.3.2 Reaction Rate Constant1.3.3 Heat of Reaction; 1.3.4 Chemical

Equilibrium and Temperature; 1.3.5 Yield, Conversion and Selectivity; 1.3.6 Microbial Growth Kinetics; 1.4 Mass Transfer Theory; 1.4.1 Stagewise and Differential Mass Transfer Contacting; 1.4.2 Phase Equilibria; 1.4.3 Interphase Mass Transfer; 2 Process Dynamics Fundamentals; 2.1 Signal and Process Dynamics; 2.1.1 Measurement and Process Response; 2.1.1.1 First-Order Response to an Input Step-Change Disturbance; 2.1.1.2 Case A: Concentration Response of a Continuous Flow, Stirred Tank
2.1.1.3 Case B: Concentration Response in a Continuous Stirred Tank with Chemical Reaction2.1.1.4 Case C: Response of a Temperature Measuring Element; 2.1.1.5 Case D: Measurement Lag for Concentration in a Batch Reactor; 2.1.2 Higher Order Responses; 2.1.2.1 Case A: Multiple Tanks in Series; 2.1.2.2 Case B: Response of a Second-Order Temperature Measuring Element; 2.1.3 Pure Time Delay; 2.1.4 Transfer Function Representation; 2.2 Time Constants; 2.2.1 Common Time Constants; 2.2.1.1 Flow Phenomena; 2.2.1.2 Diffusion-Dispersion; 2.2.1.3 Chemical Reaction; 2.2.1.4 Mass Transfer
2.2.1.5 Heat Transfer2.2.2 Application of Time Constants; 2.3 Fundamentals of Automatic Control; 2.3.1 Basic Feedback Control; 2.3.2 Types of Controller Action; 2.3.2.1 On/Off Control; 2.3.2.2 Proportional-Integral-Derivative (PID) Control; 2.3.2.3 Case A: Operation of a Proportional Temperature Controller; 2.3.3 Controller Tuning; 2.3.3.1 Trial and Error Method; 2.3.3.2 Ziegler-Nichols Open-Loop Method; 2.3.3.3 Cohen-Coon Controller Settings; 2.3.3.4 Ultimate Gain Method; 2.3.3.5 Time Integral Criteria; 2.3.4 Advanced Control Strategies; 2.3.4.1 Cascade Control; 2.3.4.2 Feedforward Control
2.3.4.3 Adaptive Control

Sommario/riassunto

In this book, the modelling of dynamic chemical engineering processes is presented in a highly understandable way using the unique combination of simplified fundamental theory and direct hands-on computer simulation. The mathematics is kept to a minimum, and yet the nearly 100 examples supplied on a CD-ROM illustrate almost every aspect of chemical engineering science. Each example is described in detail, including the model equations. They are written in the modern user-friendly simulation language Berkeley Madonna, which can be run on both Windows PC and Power-Macintosh computers.Mad

2.	Record Nr.	UNINA9910796076303321
	Autore	Bower John A (Lecturer in food science)
	Titolo	Statistical methods for food science [[electronic resource]] : introductory procedures for the food practitioner / / John A. Bower
	Pubbl/distr/stampa	Chichester, West Sussex, UK ; ; Hoboken, NJ, : Wiley-Blackwell, 2013
	ISBN	111854160X 9781118541609 9781118541593
	Edizione	[2nd ed.]
	Descrizione fisica	1 online resource
	Disciplina	664.0072
	Soggetti	Food - Research - Statistical methods Home economics
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di bibliografia	Includes bibliographical references and index.