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Font: Arial - 10 - Bold Italic Underline Text Color Background Color

Alignment: Wrap Text Merge & Center

Number: Date Currency Percent

Conditional Formatting as Table Styles

13

LINE SIZE & PRESSURE DROP CALCULATION

CLIENT: PROJECT: LOCATION: DATE: BY: REV: 32

INPUT

Line Number		1	2	3	4	5	6	7
Drawing Ref		1	2	3	4	5	6	7
from						dic	E-214	P-2306
To		CR service	CASE - I			E-114	v-208	Unloading arm
Nominal or Internal diameter (NI)		N	N	N	N	N	N	N
Diameter	[in]	2	4	4	10	0.75	1.5	18
Schedule (X for Standard) (Note 3)		X	X	X	X	X	X	X
Pipe roughness (X to default)	(Note 1) [in]	X	X	X	X	X	X	X
Phase (L, G, or M)		L	L	G	G	L	L	L
Liquid Flowrate	[gph]	6000	9084			185.2	185	1472000
Gas Flowrate	[gph]	0	0	692.7919746	692.7919746	0	0	0
Temperature	[°C]	40	32	32	32	150	150	80
Pressure	[psig]	10.00	0.00	4.50	4.50	3.1	2.5	0.1
Molecular Weight		71		28	28	133.5	133.5	0
Liquid Density	[g/in ³]	1580	986.4	0	0	826	826	820
Gas Density (X to calculate)	[g/in ³]	0	0	4.873	4.873	X	X	X
Cp/Cv (X to default 1)		0	0	X	X	X	1.2	1.2
Gas Compressibility Factor Z (X to default 1)		0	0	X	X	X	X	X
Gas Visc. (X to default 0.025)	[cP]	0	0	X	X	X	X	X
Liquid / Mixed Phase Viscosity	[cP]	0.393	641.160			1.6	2	0
Liquid Surface Tension	[dynes/cm]					20.2	0	0

FORMAL PROCESS DATA ANALYSIS LIQUID-OK LIQUID-OK GAS-OK GAS-OK LIQUID-OK LIQUID-OK Mixing Liquid

Excel Spreadsheets Chemical Engineering

Victor J. Law



Excel Spreadsheets Chemical Engineering:

Numerical Methods for Chemical Engineers Using Excel, VBA, and MATLAB Victor J. Law, 2013-03-05 While teaching the Numerical Methods for Engineers course over the last 15 years the author found a need for a new textbook one that was less elementary provided applications and problems better suited for chemical engineers and contained instruction in Visual Basic for Applications VBA This led to six years of developing teaching notes that

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Numerical Calculations for Process Engineering Using Excel VBA Chi M. Phan, 2023-12-01 Numerical Calculations for Process Engineering Using Excel VBA provides numerical treatment of process engineering problems with VBA programming and Excel spreadsheets The problems are solving material and energy balances optimising reactors and modelling multiple factor processes The book includes both basic and advanced codes for numerical calculations The basic methods are presented in different variations tailored to particular applications Some macros are combined with each other to solve engineering problems Examples include combining the bisection method and binary search to optimise an implicit correlation combining golden section search with Euler s method to optimise a reactor and combining bisection code and Euler s method to solve steady state heat distribution The text also includes nonconventional examples such as harmony search and network analysis The examples include solutions to common engineering problems such as adiabatic flame temperature plug flow reactor conversion batch reactor

heat diffusion and pinch analysis of heat exchanger networks The VBA code is presented with mathematical equations and flowcharts enabling the audience to adopt the solutions to different problems The book contains many demonstrations of numerical techniques to guide users It also includes useful summaries of VBA commands functions and Excel predefined functions accessible in VBA While the book is developed primarily for undergraduate students the book is a helpful resource for postgraduate students and engineers

The Excel Spreadsheet for Engineers and Scientists Irvin H. Kral, 1992 A complete tutorial on how to use all version of the excel spreadsheets including 3 0 for specific engineering and scientific functions

A Step by Step Approach to the Modeling of Chemical Engineering Processes Liliane Maria Ferrareso Lona, 2017-12-15 This book treats modeling and simulation in a simple way that builds on the existing knowledge and intuition of students They will learn how to build a model and solve it using Excel Most chemical engineering students feel a shiver down the spine when they see a set of complex mathematical equations generated from the modeling of a chemical engineering system This is because they usually do not understand how to achieve this mathematical model or they do not know how to solve the equations system without spending a lot of time and effort Trying to understand how to generate a set of mathematical equations to represent a physical system to model and solve these equations to simulate is not a simple task A model most of the time takes into account all phenomena studied during a Chemical Engineering course In the same way there is a multitude of numerical methods that can be used to solve the same set of equations generated from the modeling and many different computational languages can be adopted to implement the numerical methods As a consequence of this comprehensiveness and combinatorial explosion of possibilities most books that deal with this subject are very extensive and embracing making need for a lot of time and effort to go through this subject It is expected that with this book the chemical engineering student and the future chemical engineer feel motivated to solve different practical problems involving chemical processes knowing they can do that in an easy and fast way with no need of expensive software

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industries The book provides a detailed description and hands on experience on process design in chemical engineering and it is an integrated text that focuses on practical design with new tools such as Microsoft Excel spreadsheets and UniSim simulation software Written by two of the industry s most trustworthy and well known authors this book is the new standard in chemical biochemical pharmaceutical petrochemical and petroleum refining Covering design analysis simulation integration and perhaps most importantly the practical application of Microsoft Excel UniSim software this is the most comprehensive and up to date coverage of all of the latest developments in the industry It is a must have for any engineer or student s library

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Spreadsheets in Science and Engineering Gordon Filby,2013-12-18 Spreadsheets in Science and Engineering shows scientists and engineers at all levels how to analyze validate and calculate data and how the analytical and graphic capabilities of spreadsheet programs ExcelR can solve these tasks in their daily work The examples on the CD ROM accompanying the book include material of undergraduate to current research level in disciplines ranging from chemistry and chemical engineering to molecular biology and geology

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Separation Processes Wittaya Teppaitoon,2017-02-28

[Chemical Engineering Design](#) Gavin Towler,Ray Sinnott,2008 Product Description Chemical Engineering Design is a complete course text for students of chemical engineering Written for the Senior Design Course and also suitable for introduction to chemical engineering courses it covers the basics of unit operations and the latest aspects of process design equipment selection plant and operating economics safety and loss prevention It is a textbook that students will want to keep through their undergraduate education and on into their professional lives Provides students with a text of unmatched relevance for the Senior Design Course and Introductory Chemical Engineering Courses Teaches commercial engineering tools for simulation and costing Comprehensive coverage of unit operations design and economics Strong emphasis on HS 108 realistic commercial design projects from diverse industries A rigorous pedagogy assists learning with detailed worked examples end of chapter exercises plus supporting data and Excel spreadsheet calculations plus over 150 Patent References for downloading from the companion website Extensive instructor resources include lecture slides image bank and solutions manual for adopting instructors For further information <http://textbooks.elsevier.com>

[Practical Numerical Methods for Chemical Engineers](#) Richard A. Davis,2014-10-02 This NEW 3rd edition builds on the popular success of prior editions to expand the breadth of Practical Numerical Methods with more VBA macros that boost Excel s power for modeling and analysis Engineers scientists will find enhanced coverage of computational tools applicable to a wider variety of problems in their own disciplines Excel is the de facto computational tool used by practicing engineers scientists Use this book to become proficient with VBA programming customize your workbooks with time saving enhancements powerful numerical techniques Topics include an introduction to modeling Excel VBA programming root finding for systems of linear nonlinear equations eigenproblems derivative approximation optimization experimental uncertainty analysis least squares

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Chemical Engineering, 2007

Petroleum Refining Design and Applications Handbook, Volume 3 A. Kayode Coker, 2022-06-14 PETROLEUM REFINING The third volume of a multi volume set of the most comprehensive and up to date coverage of the advances of petroleum refining designs and applications written by one of the world s most well known process engineers this is a must have for any chemical process or petroleum engineer This volume continues the most up to date and comprehensive coverage of the most significant and recent changes to petroleum refining presenting the state of the art to the engineer scientist or student This book provides the design of process equipment such as vessels for the separation of two phase and three phase fluids using

Excel spreadsheets and extensive process safety investigations of refinery incidents distillation distillation sequencing and dividing wall columns It also covers multicomponent distillation packed towers liquid liquid extraction using UniSim design software and process safety incidents involving these equipment items and pertinent industrial case studies Useful as a textbook this is also an excellent handy go to reference for the veteran engineer a volume no chemical or process engineering library should be without Written by one of the world s foremost authorities this book sets the standard for the industry and is an integral part of the petroleum refining renaissance It is truly a must have for any practicing engineer or student in this area This groundbreaking new volume Assists engineers in rapidly analyzing problems and finding effective design methods and select mechanical specifications Provides improved design manuals to methods and proven fundamentals of process design with related data and charts Covers a complete range of basic day to day petroleum refining operations topics with new materials on significant industry changes Includes extensive Excel spreadsheets for the design of process vessels for mechanical separation of two phase and three phase fluids Provides UniSim based case studies for enabling simulation of key processes outlined in the book Helps achieve optimum operations and process conditions and shows how to translate design fundamentals into mechanical equipment specifications Has a related website that includes computer applications along with spreadsheets and concise applied process design flow charts and process data sheets Provides various case studies of process safety incidents in refineries and means of mitigating these from investigations by the US Chemical Safety Board Includes a vast Glossary of Petroleum and Technical Terminology

Petroleum Refining Design and Applications Handbook, Volume 4 A. Kayode Coker, 2023-02-01 PETROLEUM REFINING This fourth volume in the Petroleum Refining set this book continues the most up to date and comprehensive coverage of the most significant and recent changes to petroleum refining presenting the state of the art to the engineer scientist or student This book provides the design of heat exchanger equipment crude oil fouling in pre heat train exchangers crude oil fouling models fouling mitigation and monitoring prevention and control of liquid and gas side fouling using the Excel spreadsheet and UniSim design software for the design of shell and tube heat exchangers double pipe heat exchangers air cooled exchangers heat loss tracing for process piping pinch analysis for hot and cold utility targets and process safety incidents involving these equipment items and pertinent industrial case studies Use of UniSim Design UniSim STE software is illustrated in further elucidation of the design of shell and tube heat exchangers condensers and UniSim ExchangerNet R470 for the design of heat exchanger networks using pinch analysis This is important for determining minimum cold and hot utility requirements composite curves of hot and cold streams the grand composite curve the heat exchanger network and the relationship between operating cost index target and the capital cost index target against T_{min} Useful as a textbook this is also an excellent handy go to reference for the veteran engineer a volume no chemical or process engineering library should be without Written by one of the world s foremost authorities this book sets the standard for the industry and is an integral part of the petroleum refining renaissance

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