

J. L. A. Koolen

Design of Simple and Robust Process Plants



Design Of Simple And Robust Process Plants

Eberhard Wegener



Design Of Simple And Robust Process Plants:

Design of Simple and Robust Process Plants J. L. A. Koolen, 2001-10-15 The approaches to design process plants described in this book lead to process designs which require 30 40% less capital than usual The book is unique since it is the first comprehensive work addressing both the total process design and operational approach Technological developments during the last decade made the design of really competitive processes possible Mechanical developments have resulted in reliable and robust equipment Process developments have created opportunities to minimize the amount of equipment furthermore different logistic approaches integration of process functionality and intensification of the unit operations are possible Computer and control technology allows remote control operation and first pass prime production In this work design philosophies are discussed and their implementation is shown as a structured approach for planned and existing plants Numerous examples are presented to illustrate what simple design can create The work is intended for experienced engineers and managers involved in process design control design and operation but is also interesting for students Project engineers and managers have to apply these new approaches to achieve competitive processes A process plant should meet the simplicity and robustness of a household refrigerator This book has been written to allow to achieve this aim Chairman of the Judges Award from IChemE 2003

An Applied Guide to Process and Plant Design Sean Moran, 2019-06-12 An Applied Guide to Process and Plant Design 2nd edition is a guide to process plant design for both students and professional engineers The book covers plant layout and the use of spreadsheet programs and key drawings produced by professional engineers as aids to design subjects that 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 Includes new and expanded content including illustrative case studies and practical examples Explains how to deliver a process design that meets both business and safety criteria Covers plant layout and the use of spreadsheet programs and key drawings as aids to design Includes a comprehensive set of selection tables covering aspects of professional plant design which early career designers find most challenging

Montagegerechte Anlagenplanung Eberhard Wegener, 2012-03-06 Die Montage verfahrenstechnischer Anlagen stellt ein Aufgabengebiet dar in dem sich die Erfordernisse je nach Randbedingungen unterscheiden Selbst der Aufbau derselben Anlage an verschiedenen Standorten unterscheidet sich im Montageablauf und in den Erfordernissen die der Standort mit sich bringt In der Kette vom Beginn der Anlagenplanung bis zur Inbetriebnahme ist die Montage eines der letzten Glieder Das bedeutet einerseits dass die Pufferzeiten in der terminlichen Ablaufplanung

weitgehend verbraucht sind und kaum noch Zeiten für Änderungen und Nacharbeiten zur Verfügung stehen andererseits aber dass spätestens hier alle Fehler und Unzulänglichkeiten die in den vorgelagerten Stufen entstanden sind beseitigt werden müssen Um eine effektive Montage bei Gewährleistung der Funktionssicherheit und weiterer relevanter Anforderungen an verfahrenstechnische Anlagen zu erreichen müssen diese technologischen Belange frühzeitig im Planungsablauf berücksichtigt werden Das Buch wendet sich an Ingenieure des Maschinen Apparate Rohrleitungs und Anlagenbaues die sich mit der Anlagenplanung beschäftigen Auch Studierende dieser Fachrichtungen können mit diesem Werk bereits vor ihrem Start ins Berufsleben die Einsicht schaffen Planung und Montage einer Anlage dürfen nicht losgelöst voneinander betrachtet werden

The Engineer's Guide to Plant Layout and Piping Design for the Oil and Gas Industries Geoff B.

Barker,2017-11-25 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 Chemical Engineering Progress ,2007

Waste Heat Recovery: Principles And Industrial Applications Chirila Chandra Sekhara Reddy,Gade Pandu

Rangaiah,2022-04-22 This book presents a comprehensive coverage of fundamentals latest technologies and industrial applications of Waste Heat Recovery WHR in process industries Simple and effective WHR techniques are illustrated with industrial examples to help readers to identify calculate and develop heat recovery potential in their processes Key benefits of WHR projects which are useful for developing successful WHR business cases are demonstrated Special emphasis is given towards major technical risks and mitigation plans for implementing sound WHR projects Techniques for reaping benefits of WHR projects for longer periods are also outlined Applying these techniques with an understanding of the principles explained in this book and taking cues from the examples and suggestions the reader will be able to realise sustained

benefits in their process Solution manual is provided for free to instructors who adopt this textbook Please send your request to sales wpsc com

Inherently Safer Design, 2023-07-20 Inherently Safer Design Volume Seven in this ongoing series highlights new advances in chemical engineering with interesting chapters that provide an Introduction to Inherently Safer Design ISD ISD Fundamentals History of ISD ISD Life Cycle Considerations ISD Indices ISD and Human Factors Conceptual and Practical Applications of ISD Challenges to ISD Application ISD Regulatory Requirements ISD Case Studies Risk based ISD ISD and Digitalization ISD and Inherently Safer Operation ISO and the Future of ISD Provides the authority and expertise of leading contributors from an international board of authors Presents the latest release in the Inherently Safer Design series Updated release includes the latest information on the Methods in Chemical Process Safety

Chemical Processes for a Sustainable Future Trevor Letcher, Janet Scott, Darrell Patterson, 2015-11-09 This comprehensive book approaches sustainability from two directions the reduction of pollution and the maintaining of existing resources both of which are addressed in a thorough examination of the main chemical processes and their impact Divided into five sections each introduced by a leading expert in the field the book takes the reader through the various types of chemical processes demonstrating how we must find ways to lower the environmental cost of both pollution and contributions to climate change of producing chemicals Each section consists of several chapters presenting the latest facts and opinion on the methodologies being adopted by the chemical industry to provide a more sustainable future A follow up to Materials for a Sustainable Future Royal Society of Chemistry 2012 this book will appeal to the same broad readership industrialists and investors policy makers in local and central governments students teachers scientists and engineers working in the field and finally editors journalists and the general public who need information on the increasingly popular concepts of sustainable living

Ozonation of Water and Waste Water Christiane Gottschalk, Judy Ann Libra, Adrian Saupe, 2010-02-01 Dieser Band befasst sich mit chemischen Grundlagen technischen Anwendungen und wirtschaftlichen Gesichtspunkten des Ozons wobei der Schwerpunkt auf der Behandlung von Wasser und Abwasser durch Ozonisierung liegt Nach einer Einleitung kommen zun chst Toxikologie Reaktionsmechanismen und grunds tzliche Einsatzm glichkeiten zur Sprache Der hintere Teil ist eher praktisch ausgerichtet mit Kapiteln zu Versuchsanordnungen Ausr stung analytischen Verfahren sowie Informationen zu Stofftransport und Reaktionskinetik bei Industrieprozessen

Productive and Economic Performance of Small Ruminants in Two Production Systems of the Highlands of Ethiopia Getahun Legesse, 2008-10-14 Small ruminants are an important component of the Ethiopian mixed farming systems A key feature of small ruminants in these systems is that they fulfil multiple roles ranging from socio cultural purposes to providing meat milk and manure Agro climatic and socio economic factors trigger off variations in small ruminant production systems underestimating this diversity in sheep and goats management may hamper the identification of constraints and opportunities for sustainable development of the systems Likewise attempts to improve performance under the prevailing conditions must take into consideration their

specific purpose in the production system and their performance potential under varying management levels. The assessment of the current productive and economic performance of small ruminants also provides baseline data against which the success of future interventions can be measured. The purpose of this study was to evaluate the productivity and the household income contribution of small ruminant enterprises of smallholder farmers in two mixed farming systems of southern Ethiopia viz Adilo and Kofele and to identify possible options for future improvements. Adilo represents the most densely populated areas in Ethiopia while Kofele represents an area of the southern highlands populated at medium level. Kofele is an area with a relatively cool climate, food sufficiency and fairly high agricultural potential in terms of soil fertility and land availability and the farmers in the area keep more livestock than their counterparts in Adilo. Adilo on the other hand is an area characterized by land scarcity and food insufficiency. Both areas are prominent suppliers of small ruminants to the neighbouring big cities and Addis Ababa. The study was carried out following a step wise approach. Understanding the existing situation of small ruminant production was dealt with a diagnostic survey. 399 households and group discussions in respective sites between April and July 2004. Detailed information on growth, reproductive and economic parameters was gathered through a one year long flock and household monitoring. 155 households between September 2005 and August 2006. Semi structured surveys and feedback workshops were also conducted with the participating households to elicit information on income, expense details and the adoption likelihood of small ruminant technologies in the study area. The statistical data analyses were performed applying descriptive statistics, general linear models and logistic regression using Statistical Analysis System (SAS) software. Results of the diagnostic survey revealed that small ruminants fulfil several roles in the study area. However, the principal purpose of keeping sheep and goats was to generate cash income. Sheep milk consumption was widespread around Kofele unlike most agricultural systems in the country. Nearly all respondents in Adilo reported fattening their sheep before sale while such a practice was uncommon in Kofele. Informal insurance schemes were evolving among the sheep keepers in Adilo. The common problem identified from both individual interviews and group discussions was feed shortage. Small ruminant disease e.g. fasciolosis was also the major constraint in Kofele where marshy areas are increasingly assigned for grazing in the rainy season as more suitable lands are gradually allocated to cropping activities. The average litter size at birth of sheep covered in this study was 1.3, the rate of single and twin births being 74% and 25% respectively. Significantly higher litter size was obtained in the Adilo small ruminant system that implies better reproductive rate thereby higher meat output from the area. There is evidence from the reproductive and growth performance that considerable stress occurs in small ruminants during the dry season due to inadequate nutrition. The lambs in Kofele exhibited significantly higher birth and weaning weights while the average pre weaning daily gains were about 100g in both sites. High young mortalities of about 20% in lambs and kids can be considered as a major constraint. The flock structure of small ruminants in the present study showed that male offtake at a young age around one year was high. The overall offtake rate which was

calculated for the one year study period as sales plus slaughters plus animals gifted out permanently as a proportion of total flock size at the start of the study was more than 90% due mainly to sales the value obtained is among the highest reported offtake rates in sub Saharan Africa The flock structure and the offtake suggest that the management objective of sheep owners is mainly meat production for the market The sale of small ruminants contributed to 39% and 23% of total farm cash income among small ruminant keepers in Adilo and Kofele respectively Though the two research sites are practicing rainfed mixed farming are known for their small ruminant markets and are only a hundred kilometres apart the existing practices that may be an entry point for further intervention and strengthening are different Farmers in each site initiated new practices like fattening and managing a household veterinary kit In Adilo logistic regression analysis revealed that the utilization of commercial concentrate decreased with increasing age and farm size only up to a point The likelihood of adoption increased with livestock holding up to reaching a maximum and then declines as holding increases further Female farmers literate household heads and households with high family size were more likely to adopt the utilization of commercial concentrates On the other hand farm size and livestock holding significantly influenced the probability of adopting the practice of treating small ruminants via the household veterinary kits in Kofele area Treating small ruminants in the household increased with farm size only up to the point at which it reaches a maximum Those farmers who own a high number of livestock were significantly inclined to undertake the mentioned practice in the household The growing demand for meat from small ruminants the improving transportation infrastructure and the experience of farmers in small ruminant keeping are providing opportunities to enhance the contribution of the sector to smallholder farmers economy The performance of the animals can be improved by reinforcing community animal health services and designing alternative feed resources like fodder trees in order to supplement breeding females and young stock at critical seasons of the year With regard to feeding attention should also be paid to the shortest feeding regimen before the holidays in which most sales are occurring particularly through strategic feeding and fattening The current study has analysed two typical mixed farming systems in southern Ethiopia employing methods of questionnaires and a participatory approach directed towards capturing farm households and family decisions Yet the comparative evaluation of small ruminant systems remained the major focus of the work The merging of these two approaches was performed in a systematic way showing its limitations in only partial consideration of non livestock activities There also still remains the need to determine the performance of small ruminants under a purposefully stratified range of management systems and under long term variations of environmental factors so that the out scaling of results may have a broader inductive basis

The Chemical Engineer ,2003

Deutsche

Nationalbibliographie und Bibliographie der im Ausland erschienenen deutschsprachigen Veröffentlichungen

,2002

Applied Mechanics Reviews ,1986

Macromolecular Chemistry and Physics ,2004

Waste-to-Resources

2017 Matthias Kühle-Weidemeier,Katrin Büscher,2017-05-08 Sehr geehrte Teilnehmerinnen und Teilnehmer unsere

Wirtschaft ben tigt die kontinuierliche Versorgung mit Rohstoffen Und das gilt nicht nur f r uns sondern f r alle L nder Gleichzeitig sehen wir uns nat rlichen Grenzen f r den weltweiten Ressourcenverbrauch gegen ber Die Umweltorganisation Global Footprint Network berechnet seit dem Jahr 2006 j hrlich den Tag an dem die Weltbev lkerung so viele kologische Ressourcen verbraucht hat wie unser Planet in einem Jahr regeneriert Im Jahr 2006 fiel dieser Earth Overshoot Day auf den 24 August Im letzten Jahr also zehn Jahre sp ter war es bereits der 8 August

The Control Handbook (three volume set) William S. Levine, 2018-10-08 At publication The Control Handbook immediately became the definitive resource that engineers working with modern control systems required Among its many accolades that first edition was cited by the AAP as the Best Engineering Handbook of 1996 Now 15 years later William Levine has once again compiled the most comprehensive and authoritative resource on control engineering He has fully reorganized the text to reflect the technical advances achieved since the last edition and has expanded its contents to include the multidisciplinary perspective that is making control engineering a critical component in so many fields Now expanded from one to three volumes The Control Handbook Second Edition brilliantly organizes cutting edge contributions from more than 200 leading experts representing every corner of the globe They cover everything from basic closed loop systems to multi agent adaptive systems and from the control of electric motors to the control of complex networks Progressively organized the three volume set includes Control System Fundamentals Control System Applications Control System Advanced Methods Any practicing engineer student or researcher working in fields as diverse as electronics aeronautics or biomedicine will find this handbook to be a time saving resource filled with invaluable formulas models methods and innovative thinking In fact any physicist biologist mathematician or researcher in any number of fields developing or improving products and systems will find the answers and ideas they need As with the first edition the new edition not only stands as a record of accomplishment in control engineering but provides researchers with the means to make further advances

European Control Conference 1993, 1993-06-28 Proceedings of the European Control Conference 1993 Groningen Netherlands June 28 July 1 1993

Iterative Identification and Control Pedro Albertos, Antonio Sala Piqueras, 2012-12-06 An exposition of the interplay between the modelling of dynamic systems and the design of feedback controllers based on these models is the main goal of this book The combination of both subjects into a cohesive development allows the consistent treatment of both problems to yield powerful new tools for the improvement of system performance Central among the themes of this work is the observation that operation of a system in feedback with a controller exposes the areas in which the model fit is constraining the controller performance achieved The book presents new techniques for the understanding of the iterative improvement of performance through the successive fitting of models using closed loop data and the design of high performance controllers using these models The subject matter includes New approaches to understanding how to affect the fit of dynamical models to physical processes through the choice of experiments data pre filtering and model structure connections between robust control

design methods and their dependency on the quality of model fit experimental design in which data collected in operation under feedback can reveal areas that limit the performance achieved iterative approaches to link these model fitting and control design phases in a cogent manner so as to achieve improved performance overall The authors of individual chapters are some of the most renowned and authoritative figures in the fields of system identification and control design *Iterative Identification and Control* P. Albertos Pérez, Doctor Antonio Sala, 2002-05-21 An exposition of the interplay between the modelling of dynamic systems and the design of feedback controllers based on these models The authors of individual chapters are some of the most renowned and authoritative figures in the fields of system identification and control design

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