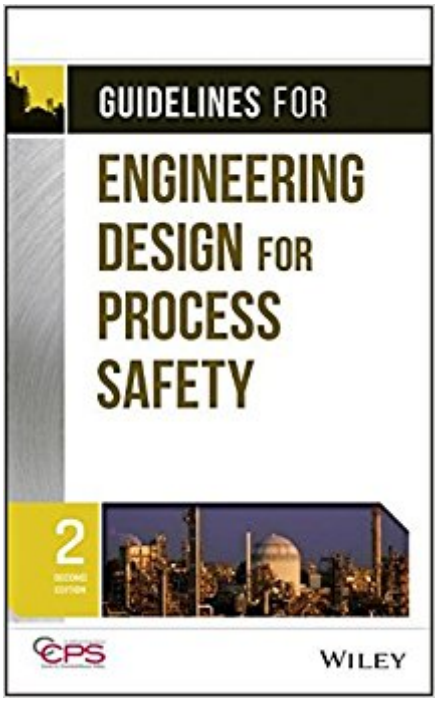
Guidelines For Engineering Design For Process Safety



Synopsis

This updated version of one of the most popular and widely used CCPS books provides plant design engineers, facility operators, and safety professionals with key information on selected topics of interest. The book focuses on process safety issues in the design of chemical, petrochemical, and hydrocarbon processing facilities. It discusses how to select designs that can prevent or mitigate the release of flammable or toxic materials, which could lead to a fire, explosion, or environmental damage. Key areas to be enhanced in the new edition include inherently safer design, specifically concepts for design of inherently safer unit operations and Safety Instrumented Systems and Layer of Protection Analysis. This book also provides an extensive bibliography to related publications and topic-specific information, as well as key information on failure modes and potential design solutions.

Book Information

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Customer Reviews

â œI highly recommend it to process design engineers, project engineers, facility operators, and process safety/loss prevention specialists who will find it very useful." (Process Safety Progress, 1 November 2012)Â â œWhile detailed engineering designs are outside the scope of the book, the authors provide extensive references to assist designers who wish to go beyond safety philosophy to the specifics of a particular safety system design.â •Â (Chemical Engineering Progress, 1 August 2012)

Since 1985, the Center for Chemical Process Safety (CCPS) has been the world leader in

developing and disseminating information on process safety management and technology.Â CCPS, an industry technology alliance of the American Institute of Chemical Engineers (AIChE), has published over 80 books in its process safety guidelines and process safety concepts series, and over 100 training modules through its Safety in Chemical Engineering Education (SACHE) series.

"Guidelines for Engineering Design for Process Safety" is a comprehensive introduction to inherently safer industrial processing plant design. Published by the Center for Chemical Process Safety, it covers everything from plant design (including a brief but very useful "Inherent Process Safety Checklist," pp. 44-46,) to equipment design, materials selection, piping systems, heat transfer fluid systems, process monitoring and control, electrical hazards, sources of ignition, fire protection, deflagration and detonation flame arresters, explosion protection, effluent disposal systems, and documentation.The book focuses on hazard mitigation and managing unavoidable hazards. Optimally this book would be consulted prior to building a new plant, but has much of value for those working in existing plants as well. I thought the quotation from p. 343 was quite insightful: "Years of uneventful operation usually occur before a hazardous condition is recognized." So often people equate low accident rates and safety, but this book dispels that notion, and latent failures are covered in detail. One feature I particularly like about this book is the great list of references at the end of each chapter that deal specifically with that chapter’s material. This is so much more helpful than a single giant reference section at the end of the book.Chapter six, "Piping Systems," is one of the best in the book. Not only does it discuss theoretical and practical design constraints (the book is especially strong on welding, gaskets, and flanges,) but discusses the advantages and disadvantages of different types of joints and valves with an eye toward reducing fugitive emissions, discussing fire safety and EPA requirements in the process. The hazards of bellows are also well covered, as are expansion joints and the issues inherent with them (e.g. squirm failure, etc.)Chapter nine, "Process Monitoring and Control," is also outstanding. The discussions of process sensitivity and process hazards, and redundancy and diversity of instrumentation are excellent, and the "Instrumentation and Control Checklist" on p. 293 is short but valuable. The discussions of automation, safety considerations, and interlocks are very lucid, and safety professionals from many diverse industries would benefit from reading this chapter.Chapter eleven, "Sources of Ignition" was another standout. This is an extremely complex and all-encompassing chapter. Many of the items discussed early in the chapter are of a fairly obvious nature (e.g. ignition from open flames, electrical sources, etc.) In short order the chapter delves into much more complex issues, and has perhaps the best discussion of autoignition I have ever read. My eyes were opened to ignition

sources I had not ever considered: p. 342 gives a wide range of nonpyrophoric items that may autoignite at room temperature or less in certain circumstances. These items varied from ferrous oxide to fish scraps (ignition was highly variable to initial conditions.) It’s this kind of unintuitive information that makes this book such a valuable reference to safety managers and engineers.Though published in 1993, this is still an extremely useful reference to people working in the process industries, especially the chemical and petroleum industries. I now focus on aviation safety, but there are more similarities than dissimilarities, and I found the book insightful. I was previously the Production Manager for a chemical manufacturing company, and I wish I owned this book then. I recommend it highly for those concerned with safety in any type of processing environment.

It was everything that I expected and more.It is a primary design guidance document necessary for the chemical process safety practitioner’s bookshelf.

this book is just what the company was looking for the improvement of engineering, beside this, the book has been pretty useful.

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