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| Titolo                  | Inherently safer chemical processes [[electronic resource] ] : a life cycle approach // Center for Chemical Process Safety                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| Edizione                | [2nd ed.]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Descrizione fisica      | 1 online resource (431 p.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Collana                 | A CCPS concept book                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Classificazione         | VN 5000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Disciplina              | 660.28<br>660/.2804                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Soggetti                | Chemical engineering - Safety measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Lingua di pubblicazione | Inglese                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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| Note generali           | Description based upon print version of record.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Nota di bibliografia    | Includes bibliographical references (p. 357-397) and index.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Nota di contenuto       | Inherently Safer Chemical Processes: A Life Cycle Approach; Contents; 1. Introduction; 1.1 .Objectives, Intended Audience and Scope of This Book; 1.1.1. Objectives; 1.1.2. Intended Audience; 1.1.3. Scope; 1.2 Integration of this Guidance with Other CCPS Guidance; 1.3 Organization of the Book; 1.4 History of Inherent Safety; 2. The Concept of Inherent Safety; 2.1 Process Risk Management and Inherent Safety; 2.2 Inherent Safety Defined; 2.3 Inherently Safer Approaches; 2.4 Layers of Protection; 2.5 Levels of Inherent Safety; 2.6 Worked Example; 2.7 Summary<br>3. The Role of Inherently Safer Concepts in Process Risk Management3. 1 Integrating Inherent Safety in Process Risk Management Systems; 3.2 Timing for Consideration of Inherently Safer Options; 3.3 Inherent Safety Constraints; 3.4 Resolving Inherent Safety Issues; 3.5 Inherently Safer Strategies; 3.6 Summary; 4. Inherently Safer Strategies; 4.1 Definition of Inherently Safer Strategies; 4.2 Minimize; 4.2.1 Reactors; 4.2.2 Continuous Stirred Reactors; 4.2.3 Tubular Reactors; 4.2.4 Loop Reactors; 4.2.5 Reactive Distillation; 4.2.6 Storage of Hazardous |

Materials; 4.2.7 Process Piping  
 4.2.8 Process Equipment  
 4.3 Substitute; 4.3.1. Reaction Chemistry;  
 4.3.2 Solvents; 4.3.3 Refrigerants and Firefighting Agents; 4.4  
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 4.5.2 Vacuum; 4.5.3 Runaway Reactions; 4.5.4 Containment Vessels;  
 4.5.5 Heat Transfer; 4.5.6 Liquid Transfer; 4.5.7 Reactor Geometry;  
 4.5.8 Distributed Control Systems; 4.5.9 Separation of Process Steps;  
 4.5.10 Limitation of Available Energy; 4.6 Other Strategies  
 4.6.1 Limitation of Effects  
 4.6.2 Global Hazards; 4.6.3 Avoid Incorrect  
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 5.3.2 Unit Operations - Specific; 5.4 Detailed Design and Construction;  
 5.4.1 Process Design Basis; 5.4.2 Equipment; 5.4.3 Process Controls;  
 5.4.4 Supporting Facilities; 5.4.5 Batch Processes  
 5.4.6 Other Design Considerations  
 5.5 Operations, Maintenance, and  
 Modifications; 5.5.1 Preservation of Inherent Safety; 5.5.2 Inherent  
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 5.7.6 Management of Transportation Containers On-site; 6. Human  
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 Maintainability; 6.4 Error Prevention; 6.4.1 Knowledge and  
 Understanding  
 6.4.2 Design of Equipment and Controls

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## Sommario/riassunto

Inherently Safer Chemical Processes presents a holistic approach to making the development, manufacture, and use of chemicals safer. It discusses strategies for substituting more benign chemicals at the development stage, minimizing risk in the transportation of chemicals, using safer processing methods at the manufacturing stage, and decommissioning a manufacturing plant. Since the publication of the original concept book in 1996, there have been many developments on the concept of inherent safety. This new edition provides the latest knowledge so that engineers can derive maximum bene

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