1. Record Nr. UNISA996212702303316

Titolo	Guidelines for safe automation of chemical processes [[electronic resource]]
Pubbl/distr/stampa	New York, N.Y., : Center for Chemical Process Safety of the American Institute of Chemical Engineers, c1993
ISBN	1-282-81738-8 9786612817380 0-470-93825-0 1-59124-641-5 0-470-93824-2
Descrizione fisica	1 online resource (450 p.)
Disciplina	660.281 660.28150289 660/.2815/0289
Soggetti	Chemical processes - Automation - Safety measures
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Guidelines for Safe Automation of Chemical Processes; CONTENTS; List of Figures; List of Tables; Preface; Glossary; Acronyms; 1. INTRODUCTION; 1.0 Objective; 1.1 Scope; 1.2 Limitations; 1.3 Overview of the Contents; 2. THE PLACE OF AUTOMATION IN CHEMICAL PLANT SAFETY.. .A DESIGN PHILOSOPHY; 2.0 Chemical Plant Operations in Transition; 2.1 Plant Automation; 2.2 A Framework for Chemical Process Safety; 2.3 Chemical Plant Safety System Development; 2.4 Safety System Design Philosophy; 2.5 References; 3. TECHNIQUES FOR EVALUATING INTEGRITY OF PROCESS CONTROL SYSTEMS; 3.0 Introduction 3.1 Safety and Integrity Evaluation Techniques3.2 Typical Process Hazard Review Activities and Outputs; 3.3 System Integrity Evaluation Criteria and Certification Methods; 3.4 Emerging Documents; 3.5 References; 4. SAFETY CONSIDERATIONS IN THE SELECTION AND DESIGN OF BASIC PROCESS CONTROL SYSTEMS; 4.0 Introduction; 4.1 BPCS Technology Selection; 4.2 Signals; 4.3 Field Measurements; 4.4

Final Control Elements; 4.5 Process Controllers; 4.6 Operator/Control System Interfaces; 4.7 Communication Considerations in typical PES Architectures; 4.8 Electrical Power Distribution Systems
4.9 Control-System Grounding for Personnel and Signal Protection4.10 Batch Control with Regulatory and Discrete Control; 4.11 Software Design and Data Structures; 4.12 Advanced Computer-Control Strategies; 4.13 Administrative Actions; 4.14 References; 5. SAFETY CONSIDERATIONS IN THE SELECTION AND DESIGN OF SAFETY INTERLOCK SYSTEMS (SISs); 5.0 Introduction; 5.1 SIS Design Issues; 5.2 Perform SIS Requirements Analysis; 5.3 SIS Technology Selection; 5.4 Select SIS Architecture; 5.5 Select SIS Equipment; 5.6 Perform SIS DESIGN; 5.7 References
6. ADMINISTRATIVE ACTIONS TO ENSURE CONTROL SYSTEM INTEGRITY6.0 Introduction; 6.1 Communication of Procedures; 6.2 Maintenance Facilities Planning; 6.3 Testing Bpcs Hardware And Software; 6.4 SIS and Alarm Test Procedures; 6.5 Testing Frequency Requirements; 6.6 Installed Test Connections and Necessary Bypasses; 6.7 Plant Operations Training with Installed Controls; 6.8 Documentation of the BPCS and SIS; 6.9 Audit Program to Keep Emphasis on BPCS/SIS Maintenance and Documentation Activities; 6.10 Simulation; 6.11 Process Control Organization and Staffing; 6.12 References
7. AN EXAMPLE: THESE GUIDELINES APPLIED TO THE SAFE AUTOMATION OF A BATCH POLYMERIZATION REACTOR7.0 Introduction; 7.1 Project Definition; 7.2 Hazard Identification; 7.3 Process Design Strategy; 7.4 SIS Integrity Level Selection; 7.5 Design of the BPCS; 7.6 Risk Assessment and Control; 7.7 Design And Validation of the SIS; 7.8 Installation and Testing; 7.9 Administrative Procedures to Maintain Integrity; 7.10 Approach for Automation of an Existing Facility; 7.11 References; 8. THE PATH FORWARD . . . TO MORE AUTOMATED, SAFE CHEMICAL PLANTS; 8.0 Introduction
8.1 Governmental Regulations and Industry Initiatives

Sommario/riassunto

Increased automation reduces the potential for operator error, but introduces the possibility of new types of errors in design and maintenance. This book provides designers and operators of chemical process facilities with a general philosophy and approach to safe automation, including independent layers of safety.