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Collana	Practical professional books from Elsevier Practical industrial safety, risk assessment and shutdown systems for industry
Disciplina	629.895
Soggetti	Automatic control Industrial safety Risk assessment
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Note generali	Includes index.
Nota di contenuto	Front Cover; Practical Industrial Safety, Risk Assessment and Shutdown Systems for Industry; Copyright Page; Contents; Preface; Chapter 1. Introduction; 1.1 Definition of safety instrumentation; 1.2 What is this book about?; 1.3 Why is this book necessary?; 1.4 Contents of the book; 1.5 Introduction to hazards and risks; 1.6 Fatal accident rate (FAR); 1.7 Overview of safety systems engineering (SSE); 1.8 Why be systematic?; 1.9 Introduction to standards: IEC 61508 and ISA S84; 1.10 Equipment under control; 1.11 The safety life cycle model and its phases (SLC phases) 1.12 Implications of IEC 61508 for control systems1.13 Summary; 1.14 Safety life cycle descriptions; 1.15 Some websites for safety systems information; 1.16 Bibliography and sources of information; 1.17 Guidelines on sector standards; Chapter 2. Hazards and risk reduction; 2.1 Introduction; 2.2 Consider hazards under some main subjects:; 2.3 Basic hazards of chemical process; 2.4 Introduction to hazard studies and the IEC model; 2.5 Process control versus safety control; 2.6 Simple

and complex shutdown sequences, examples; 2.7 Protection layers; 2.8 Risk reduction and classification
2.9 Risk reduction terms and equations2.10 The concept of safety integrity level (SIL); 2.11 Practical exercise; Chapter 3. Hazard studies; 3.1 Introduction; 3.2 Information as input to the SRS; 3.3 Outline of methodologies for hazard studies 1, 2 and 3; 3.4 Process hazard study 2; 3.5 Risk analysis and risk reduction steps in the hazard study; 3.6 Interfacing hazard studies to the safety life cycle; 3.7 Evaluating SIS requirements; 3.8 Meeting IEC requirements; 3.9 Hazard study 3; 3.10 Conclusions; 3.11 Fault trees as an aid to risk assessment and the development of protection schemes
3.12 Hazard study 2 guidelines3.13 Hazard studies for computer systems; 3.14 Data capture checklist for the hazard study; Chapter 4. Safety requirements specifications; 4.1 Developing overall safety requirements; 4.2 Development of the SRS; 4.3 Documenting the SRS; 4.4 Determining the safety integrity; 4.5 Summary of this Chapter; Chapter 5. Technology choices and the conceptual design stage; 5.1 Introduction; 5.2 What the standards say?; 5.3 Technologies for the logic solver; 5.4 Development of safety PLCs; 5.5 Classification and certification; 5.6 Summary; 5.7 SIS architecture conventions
Chapter 6. Basic reliability analysis applied to safety systems6.1 Introduction; 6.2 Design process; 6.3 Failure modes; 6.4 Reliability formulae; 6.5 Analysis models and methods; 6.6 Some design considerations; 6.7 Summary of parameters used in the reliability analysis of the safety systems; 6.8 Some sources of reliability data for instrumentation; 6.9 Safety performance calculation packages and reliability databases; Chapter 7. Safety in field instruments and devices; 7.1 Introduction; 7.2 Objectives; 7.3 Field devices for safety; 7.4 Sensor types
7.5 Guidelines for the application of field devices

Sommario/riassunto

This is a book for engineers that covers the hardware and software aspects of high-reliability safety systems, safety instrumentation and shutdown systems as well as risk assessment techniques and the wider spectrum of industrial safety. Rather than another book on the discipline of safety engineering, this is a thoroughly practical guide to the procedures and technology of safety in control and plant engineering. This highly practical book focuses on efficiently implementing and assessing hazard studies, designing and applying international safety practices and techniques, and ensuring high r