

Contents

1	Introduction.....	9
2	Cybersecurity involves process, people, and technology	11
3	Roles and responsibilities in IEC 62443	15
4	Structure of IEC 62443	17
5	Concepts of IEC 62443.....	21
5.1	Defense in depth.....	21
5.2	The standard IEC 62443 in product and IACS lifecycles.....	23
5.3	Risk assessment according to VDI/VDE 2182.....	26
5.4	Security Levels.....	32
6	Holistic protection scheme	35
7	Security Program Ratings.....	41
7.1	Definition and methodology.....	41
7.2	Use of SPR in risk reduction.....	46
7.3	SPR and SL types	47
7.4	Views	48
8	Role-based activities and contributions in the development, practice and maintenance of a holistic protection scheme	53
8.1	Specification.....	54
8.2	Design	57
8.3	Implementation.....	64
8.4	Verification and validation	65
8.5	Operation and Maintenance	67
8.6	Update	68
8.7	Decommissioning.....	69
9	Holistic approach for product suppliers using the example of the Siemens security concept for process and discrete industries	71
9.1	Overview.....	71
9.2	Holistic security concept (HSC).....	72
9.3	Plant security.....	73
9.4	Network security.....	76
9.5	System integrity	81

9.6	Role based access	83
9.7	Consideration of attack scenarios in product development and production.....	83
A	Detailed description of the IEC 62443 documents	85
A.1	Main documents relevant for the development and practice of a holistic protection scheme	85
A.1.1	IEC 62443-2-1	85
A.1.2	IEC 62443-2-4	93
A.1.3	IEC 62443-3-2	98
A.1.4	IEC 62443-3-3	101
A.1.5	IEC 62443-4-1	112
A.1.6	IEC 62443-4-2	117
A.1.7	ISO/IEC 27001	123
A.2	Other documents of IEC 62443.....	133
A.2.1	IEC 62443-1-1	133
A.2.2	IEC 62443-1-2	134
A.2.3	IEC 62443-1-3	134
A.2.4	IEC 62443-2-3	134
A.2.5	IEC 62443-3-1	137
B	Tracing of requirements to the elements of the new organizational structure	139
B.1	SM, Security Management.....	140
B.2	LF, Security Life Cycle.....	142
B.3	RM, Risk Management	143
B.4	AC, Access Control.....	146
B.5	SI, System Integrity	149
B.6	AS, System Availability	153
B.7	DC, Data Confidentiality.....	154
B.8	AM, Asset Management	156
B.9	IM, Incident Management	158
	Bibliography	161
	Index	163