SIL Declaration of Conformity acc. to IEC 61508-1, -2 / IEC 61511-1

Description of the equipment:
2-piece, ECON ball valves

Fig.no.	Sizes	Material, pressure class
7245	½”- 8”	2-piece cast steel, flanged class 150
7248	DN 15 - 100	2-piece cast steel, flanged PN 16 / PN 40
7249	DN 15 - 200	2-piece cast steel, flanged PN 16 / PN 40
7257	½”- 8”	2-piece cast steel, flanged class 300
7285	½”- 8”	2-piece stainless steel, flanged class 150
7288	DN 15 - 100	2-piece stainless steel, flanged PN 16 / PN 40
7289	DN 15 - 200	2-piece stainless steel, flanged PN 16 / PN 40
7297	½”- 8”	2-piece stainless steel, flanged class 300
72451	½”- 8”	2-piece cast steel, flanged class 150
72491	DN 15 - 200	2-piece cast steel, flanged PN 16 / PN 40
72571	½”- 8”	2-piece cast steel, flanged class 300
72851	½”- 8”	2-piece stainless steel, flanged class 150
72891	DN 15 - 200	2-piece stainless steel, flanged PN 16 / PN 40
72971	½”- 8”	2-piece stainless steel, flanged class 300

Certificate basis: V 533.01/16

Intended application : The valves are suitable for use in a safety instrumented system up to SIL 2. Under consideration of the minimum required hardware fault, tolerance HFT = 1, the valves may be used in a redundant architecture up to SIL 3.

Device Specific Values

Probability of dangerous failure on demand	p	9,08 E-05
Confidence level	1-α	95%
Safe Failure Fraction (see note)	SFF	71%
Hardware Fault Tolerance	HFT	0
Diagnostic Coverage	DC	0%
Type of Sub System		Type A
Mode of Operation		Low demand
Proof Test Coverage	PTC	> 62%
Partial Stroke Test Coverage	PSTC	not considered

Note: the Safe Failure Fraction (SFF) was estimated by an alternative method with a FMEA acc. to EN 161 – 2011 / A3 - 2013

Derived Values for 1oo1-Architecture

Assumed demands per year	n_{op}	1/a	1,14 E-04 / h
Assumed test interval	T_i	8760h	1 a
Total Failure Rate	$\lambda_S + \lambda_D$	3,57 E-08 / h	36 FIT
Lamda dangerous Detected	λ_{DD}	0,00 E+00 / h	0 FIT
Lamda Safe	λ_S	2,54 E-08 / h	25 FIT
Mean Time to Failure	MTTF	2,80 E+07 h	3.195 a
Mean Time to Dangerous Failure	$MTTF_D$	9,65 E+07 h	11.016 a
Average Probability of Failure on Demand	**PFD_{avg}**	**4,54 E-05**	

ERIKS Flow Control

Rob Verwijs
Quality & Product Development Manager