


SET OF COMPONENT SAFETY DATA (IEC 61508:2010)						
Set of components	UniteQ Hydraulic Control Actuators Build-up 1 with MAN100006.01					
Type	ACT100052.01, ACT100053.01, ACT100054.01, ACT100055.01, ACT100092.01, ACT100093.01, ACT100111.01, ACT100112.01, ACT100052.02, ACT100053.02, ACT100054.02, ACT100055.02, ACT100092.02, ACT100093.02, ACT100111.02, ACT100112.02					
Manufacturer	UniteQ Engineering B.V.					
Component type	Type A					
Mode of operation	Low demand operation					
Safety function	Releasing hydraulic pressure, spring force extending actuator (closing of valve). Activated when actuator is de-energized.					
Safe state	No hydraulic pressure in the actuator, actuator extended due to spring force					
Failure Rates (FIT = 10⁻⁹ failures per hour)						
Total failure rate (FIT)	4933,0					
Failure rate distribution	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}	No Effect	SFF(%)
FIT	1372,1	442,6	86,9	153,1	2878,4	92,55%
Specification of component architecture						
Architecture	1001					
Hardware Failure Tolerance (HFT)	0					
Diagnostic Coverage Safe (DC _S)	76%					
Diagnostic Coverage Dangerous (DC _D)	36%					
Mean Time To Restoration (MTTR)	168 hours					
Mean Time Between Failures (MTBF)	23 years					
Verification of SIL Capability						
Proof Test Interval (T ₂)	0,5 year	1 year	2 years	3 years	4 years	5 years
Probability Failure on Demand (PFD _{avg})	3,5E-04	6,9E-04	1,4E-03	2,0E-03	2,7E-03	3,4E-03
Quantitative achievable SIL	SIL 3	SIL 3	SIL 2	SIL 2	SIL 2	SIL 2
Qualitative achievable SIL	SIL 3 (HFT = 0, Type A, 90% ≤ SFF < 99%)					
Achievable SIL	SIL 3	SIL 3	SIL 2	SIL 2	SIL 2	SIL 2
Calculated by:	UniteQ Engineering. B.V.	Name:		H. Vos		
		Function:		General Director		
		Signature:				

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Safety Data UniteQ HCA BUILD-UP 1 With MAN100006.01_V3.0.doc	J.L.T MSc	1 of 1	03	