

Certificate



SIL/PL
Capability

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No.: V 547.01/16

Product tested	Butterfly Valves	Certificate holder	AMPO POYAM Valves Division Valvulas Poyam Barrio Katea Auzoa S/N 20213 Idiazabal (Guipuzcoa) Spain
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Type designation	BW (Cryogenic Side entry Tripple Eccentric Butterfly Valve), RF (Cryogenic Double Flange Tripple Eccentric Butterfly Valve)		
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Codes and standards	IEC 61508 Parts 1-2 and 4-7:2010 IEC 61511-1:2016		
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Intended application	Safety Function: Move into safe position by a safety related actuator. The safe position of the valve is defined as either safely closed or safely open.		
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The valves are suitable for use in a safety instrumented system up to SIL 2 (low demand mode). Under consideration of the minimum required hardware fault tolerance HFT = 1 the valves may be used in a redundant architecture up to SIL 3.

Specific requirements	The instructions of the associated Installation, Operating and Safety Manual shall be considered.		
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Summary of test results see back side of this certificate.

Valid until 2021-11-17

The issue of this certificate is based upon an examination, whose results are documented in Report No. V 547.01/16 dated 2016-11-17.

This certificate is valid only for products which are identical with the product tested. It becomes invalid at any change of the codes and standards forming the basis of testing for the intended application.

TÜV Rheinland Industrie Service GmbH

Bereich Automation
Funktionale Sicherheit

Am Grauen Stein, 51105 Köln

Köln, 2016-11-17

Certification Body Safety & Security for Automation & Grid

Dipl.-Ing. Stephan Häb

Holder: AMPO-POYAM Valves
División Válvulas Poyam
Barrio Katea Auzoa S/N,
20213, Idiazabal, (Guipuzcoa)
SPAIN

Product tested: Butterfly Valves
BW Cryogenic Side entry Tripple Eccentric Butterfly Valve
RF Cryogenic Double Flange Tripple Eccentric Butterfly Valve

Results of Assessment

Route of Assessment		$1_H / 1_S$	
Confidence Level	$1-\alpha$	95 %	
Type of Sub-system		Type A	
Mode of Operation		Low Demand Mode	
Hardware Fault Tolerance	HFT	0	
Lambda Dangerous	λ_D	1,09 E-07 / h	109 FIT
Assumed Test Interval	T_1	8760 h	1 a
Assumed Diagnostic Coverage	DC	0 %	
Assumed β	β_{1002}	10 %	
Lambda Dangerous Undetected	λ_{DU}	1,09 E-07 / h	109 FIT
Mean Time To Dangerous Failure	MTTF _D	9,22 E+06 h	1.052 a
Average Probability of Failure on Demand 1oo1	PFD_{avg}(T₁)	4,75 E-04	
Average Probability of Failure on Demand 1oo2	PFD_{avg}(T₁)	4,75 E-05	

Periodic Tests and Maintenance

The given values require periodic tests and maintenance as described in the Safety Manual. The operator is responsible for the consideration of specific external conditions (ensuring of required quality of media, max. temperature, time of impact), and adequate test cycles.

Origin of values

The stated values are the result of extensive test series on the reliability of the safety function under critical conditions. Random and systematic failures were examined, which are the responsibility of the manufacturer.

Systematic Capability

The development and manufacturing process and the functional safety management applied by the manufacturer in the relevant lifecycle phases of the product has been audited and assessed as suitable for the use in applications with a maximum Safety Integrity Level of 3 (SC 3).