

Certificate



No.: 968/V 1299.00/22

Product tested	Slurry Angle Valves	Certificate holder	AMPO POYAM Valves Division Valvulas Poyam Barrio Katea Auzoa S/N 20213 Idiazabal (Guipuzcoa) Spain
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Type designation see Revisionlist

Codes and standards IEC 61508 Parts 1-2 and 4-7:2010

Intended application Safety Function: Open or Close on Demand

The slurry angle 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 for the complete final element the valves may be used up to SIL 3.

The slurry angle check valves are suitability for use in a certain safety instrumented system. Since the operation of the check valves is independent of any sensors, logic solvers and actuators the SIL depends on the automated components of the related system.

Specific requirements The instructions of the associated Installation, Operating and Safety Manual shall be considered.

Summary of test results see back sides of this certificate.


Valid until 2027-11-02

The issue of this certificate is based upon an evaluation in accordance with the Certification Program CERT FSP1 V1.0:2017 in its actual version, whose results are documented in Report No. 968/V 1299.00/22 dated 2022-10-10. This certificate is valid only for products, which are identical with the product tested.

TÜV Rheinland Industrie Service GmbH
Bereich Automation
Funktionale Sicherheit

Köln, 2022-11-02

Certification Body Safety & Security for Automation & Grid


Dipl.-Ing. (FH) Wolf Rückwart

Holder: AMPO POYAM Valves
 Division Valvulas Poyam
 Barrio Katea Auzoa S/N
 20213 Idiazabal (Guipuzcoa)
 Spain

Product tested: Slurry Valves
 - Angle Slurry Valve
 - Angle Bayonet Slurry Valve

Results of Assessment

Route of Assessment		$2_H / 1_S$
Type of Sub-system		Type A
Mode of Operation		Low Demand Mode
Hardware Fault Tolerance	HFT	0
Systematic Capability		SC 3

Closing on Demand

Dangerous Failure Rate	λ_D	2.61 E-07 / h	261 FIT
Average Probability of Failure on Demand 1oo1	$PFD_{avg}(T_1)$	1.16 E-03	
Average Probability of Failure on Demand 1oo2	$PFD_{avg}(T_1)$	1.18 E-04	

Open on Demand

Dangerous Failure Rate	λ_D	2.39 E-07 / h	239 FIT
Average Probability of Failure on Demand 1oo1	$PFD_{avg}(T_1)$	1.06 E-03	
Average Probability of Failure on Demand 1oo2	$PFD_{avg}(T_1)$	1.08 E-04	

Assumptions for the calculations above: DC = 0 %, $T_1 = 1$ year, MRT = 72 h, $\beta_{1oo2} = 10$ %

Origin of failure rates

The stated failure rates for low demand are the result of an FMEDA with tailored failure rates for the design and manufacturing process. Furthermore the results have been verified by qualification tests and field-feedback data. Failure rates include failures that occur at a random point in time and are due to degradation mechanisms such as ageing. The stated failure rates do not release the end-user from collecting and evaluating application-specific reliability data.

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 (e.g. ensuring of required quality of media, max. temperature, time of impact), and adequate test cycles.

Systematic Capability

The development and manufacturing processes and the functional 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 (SC3).

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 Division Valvulas Poyam
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 20213 Idiazabal (Guipuzcoa)
 Spain

Product tested: Slurry Valves
- Slurry Angle Check Valve

Results of Assessment

Route of Assessment		$2_H / 1_S$
Type of Sub-system		Type A
Mode of Operation		Low Demand Mode
Hardware Fault Tolerance	HFT	0

Closing on Demand

Dangerous Failure Rate	λ_D	7.10 E-08 / h	71 FIT
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