

Certificate



SIL/PL
Capability

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ID 0600000000

No.: 968/V 1025.00/18

Product tested

Butterfly Valves
concentric and eccentric types

Certificate holder

TTV Válvulas
Técnicas
Transformaciones y
Ventas SA
C/ Severo Ochoa, 11.
P.I. Nuestra Señora de
Butarque
28914 Leganés (Madrid)
Spain

Type designation

Concentric soft seated: DN32 ... DN3000
Concentric PTFE: DN32 ... DN600
High Temperatur metal concentric: DN32 ... DN2000
"Colossus" Metal/PTFE Double and triple eccentric: DN32 ... DN1600
Double eccentric soft seat: DN32 ... DN1600

Codes and standards

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

Intended application

The safety function can either be:
- Safe Open
- Safe Closing
- Tight Shut Off
The valves are suitable for use in a safety instrumented system up to SIL 2 in 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.

Summary of test results see back side of this certificate.

Valid until 2023-06-18

The issue of this certificate is based upon an examination, whose results are documented in Report No. 968/V 1025.00/18 dated 2018-05-28.

This certificate is valid only for products which are identical with the product tested.

TÜV Rheinland Industrie Service GmbH

Bereich Automation
Funktionale Sicherheit

Am Grauen Stein, 51105 Köln

Köln, 2018-06-18

Certification Body Safety & Security for Automation & Grid

Dr. R. G. A.

Dr.-Ing. Thorsten Gantevoort

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 **TÜVRheinland®**
Precisely Right.

Holder: TTV Válvulas
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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	
Lambda Dangerous confidence level of calculation $1-\alpha = 95\%$	λ_D	2.69 E-07 / h	269 FIT
Lambda Dangerous Undetected assumed Diagnostic Coverage DC = 0 %	λ_{DU}	2.69 E-07 / h	269 FIT
Mean Time To Dangerous Failure	MTTF _D	3.72 E+06 h	424 a
Average Probability of Failure on Demand 1oo1 assumed Proof Test Interval $T_1 = 1$ year	PFD_{avg}(T₁)	1.18 E-03	
Average Probability of Failure on Demand 1oo2 assumed Proof Test Interval $T_1 = 1$ year assumed $\beta_{1oo2} = 10\%$	PFD_{avg}(T₁)	1.19 E-04	

Origin of values

The stated values are the results of the analysis of field feedback of the last six years.
 Random and systematic failures which are the responsibility of the manufacturer were examined.

Systematic Capability

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

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.