ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

Italia

COMPLIANCE

with IEC EN 61508 and IEC EN 61511

Certificate No.: C-IS-722144112-01

CERTIFICATE OWNER: Valpres S.r.l.
Via Gitti 11
25060 Marcheno V.T. (BS) - Italy

WE HEREWITH CONFIRM THAT

THE BALL VALVES

MEET THE SIL REQUIREMENTS DETAILED IN THE ANNEXED TABLE

FOR THE SAFETY FUNCTION:

"correct switching on demand (open to closed) and tight for closing phase, in low demand mode of operation"

"correct switching on demand (closed to open), in low demand mode of operation"

Examination result:	**The above reported Ball Valves were found to meet the standard defined requirements of the safety levels detailed in the following table (T-IS-722144112-01) according to IEC EN 61508 and IEC EN 61511, under fulfillment of the conditions listed in the Report R-IS-722144112-01 Rev.1 dated September, 14th 2017 in its currently valid version, on which this Certificate is based**
Examination parameters:	**Construction/Functional characteristics and reliability and availability parameters of the above mentioned Ball Valves**
Official Report No.:	**R-IS-722144112-01 Rev.1**
Expiry Date	**September, 13th 2020**

IT IS TO BE INTENDED THAT THE ABOVE OFFICIAL REPORT AND ITS ANNEXES ARE AN INTEGRAL PART OF THIS DOCUMENT
THE PRESENT DOCUMENT SUBSITUTES AND REPEALS THE DOCUMENTS C–IS–250138-01

Reference Standard IEC EN 61508:2010 Part 2, 4, 6, 7 - IEC EN 61511:2016 Part 1, 2, 3

Sesto San Giovanni, September, 14th 2017

TÜV ITALIA Srl

TÜV ITALIA Srl
Industry Service Division
Director

Paolo Marcone

TÜV Italia Srl Industrie Service
TÜV SÜD
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SUMMARY TABLE
T – IS – 722144112 – 01

E/EE/EP safety-related system (final element)	**Ball Valves produced by Valpres S.r.l.**	
System type	Type A	
Class	Ball Valve series 76 - gasket PTFE (Class 1)	Ball Valve series 76 - gasket PTFE + glass (Class 2)
Systematic Capability	SC3	
Safety Function Definition	*SIF1: Correct switching on demand (open to closed) and tight for closing phase, in low demand mode of operation*	
Max SIL(1)	**SIL 3**	**SIL 3**
λ_{TOT}	1,065E-08	2,547E-08
λ_{NE}	2,911E-09	2,417E-09
λ_S	0,000E+00	0,000E+00
$\lambda_{DD,PST}$(2)	5,821E-10	8,175E-10
$\lambda_{DU,FPT}$	7,162E-09	2,223E-08
β and β_D factor	10%	10%
MTTR	8 h	8 h
Hardware Safety Integrity	Route 2_H	Route 2_H
Systematic Safety Integrity	Route 2_S	Route 2_S

Remarks
(1) The Safety Integrity Level (SIL) of the entire Safety Instrumented Function (SIF) must be verified via a calculation of PFD_{AVG} considering the redundant architectures, proof test interval, proof test effectiveness, any automatic diagnostics, average repair time and the specific failure rates of all products included in the SIF. Each subsystem must be checked to assure compliance with the minimum hardware fault tolerance (HFT) requirements.
(2) Considering an automatic Partial Stroke Testing

SIL classification according to Standards IEC EN 61508:2010 and IEC EN 61511:2016 for the Ball Valves produced by Valpres S.r.l. – SIF1

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E/EE/EP safety-related system (final element)	**Ball Valves produced by Valpres S.r.l.**	
System type	Type A	
Class	Ball Valve series 76 - gasket PTFE (Class 1)	Ball Valve series 76 - gasket PTFE + glass (Class 2)
Systematic Capability	SC3	
Safety Function Definition	*SIF2: Correct switching on demand (closed to open), in low demand mode of operation*	
Max SIL[1]	**SIL 3**	**SIL 3**
λ_{TOT}	1,065E-08	2,547E-08
λ_{NE}	7,572E-09	1,133E-08
λ_S	0,000E+00	0,000E+00
$\lambda_{DD,PST}$[2]	1,013E-09	2,422E-09
$\lambda_{DU,FPT}$	2,070E-09	1,172E-08
β and β_D factor	10%	10%
MTTR	8 h	8 h
Hardware Safety Integrity	Route 2_H	Route 2_H
Systematic Safety Integrity	Route 2_S	Route 2_S

Remarks
(1) The Safety Integrity Level (SIL) of the entire Safety Instrumented Function (SIF) must be verified via a calculation of PFD_{AVG} considering the redundant architectures, proof test interval, proof test effectiveness, any automatic diagnostics, average repair time and the specific failure rates of all products included in the SIF. Each subsystem must be checked to assure compliance with the minimum hardware fault tolerance (HFT) requirements.
(2) Considering an automatic Partial Stroke Testing

SIL classification according to Standards IEC EN 61508:2010 and IEC EN 61511:2016 for the Ball Valves produced by Valpres S.r.l. – SIF2

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