



Italia

COMPLIANCE

with IEC EN 61508

Certificate No.: C-IS-722246912-03

CERTIFICATE OWNER: KOSO PARCOL S.r.l. a socio unico
Via Isonzo, 2
20010, Canegrate (MI) - Italy

WE HEREWITH CONFIRM THAT
TRUNNION SIDE ENTRY BALL VALVES SERIES 7TSE
MEET THE SIL REQUIREMENTS DETAILED IN THE ANNEXED TABLES
FOR THE SAFETY FUNCTION:

SIF1: "correct switching on demand (open to closed) and tight for closing phase, in low demand mode of operation"

SIF2: "correct switching on demand (closed to open), in low demand mode of operation"

Examination result: The above reported Trunnion Side Entry Ball Valves Series 7TSE were found to meet the standard defined requirements of the safety levels detailed in the following table (T-IS-722246912-03) according to IEC EN 61508, under fulfillment of the conditions listed in the Report R-IS-722246912-03, on which this Certificate is based

Examination parameters: Construction/Functional characteristics and reliability and availability parameters of the above Trunnion Side Entry Ball Valves Series 7TSE

Official Report No.: R-IS-722246912-03

Expiry Date April, 11th 2024

IT IS TO BE INTENDED THAT THE ABOVE OFFICIAL REPORT AND ITS ANNEXES ARE AN INTEGRAL PART OF THIS DOCUMENT

Reference Standard IEC EN 61508:2010 Part 2, 4, 6, 7

Sesto San Giovanni, April, 12th 2021

TÜV ITALIA Srl



TÜV ITALIA Srl
Industry Service Division
Technical Manager

Paolo Marcone
Paolo Marcone



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SUMMARY TABLE

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<i>E/EE/EP safety-related system (final element)</i>	Trunnion Side Entry Ball Valves Series 7TSE produced by Koso Parcol S.r.l.	
<i>Size / Class</i>	1" ≤ NPS ≤ 36" Class150 to Class2500 Temperature range: -196°C - +350°C	
<i>System type</i>	Type A	
<i>Systematic Capability</i>	SC3	
<i>Safety Function Definition</i>	<i>SIF1: "Correct switching on demand (open to closed) and tight for closing phase, in low demand mode of operation"</i>	<i>SIF2: "Correct switching on demand (closed to open), in low demand mode of operation"</i>
<i>Max SIL⁽¹⁾</i>	SIL3	SIL3
λ_{TOT}	6,471E-08	6,471E-08
λ_{NE}	3,703E-09	5,295E-09
λ_S	0,000E+00	0,000E+00
$\lambda_{DD,PST}^{(2)}$	7,065E-09	7,493E-09
$\lambda_{DU,FPT}$	4,709E-09	2,688E-09
<i>β and β_D factor</i>	10%	10%
<i>MRT</i>	8 h	8 h
<i>Hardware Safety Integrity</i>	Route 2 _H	Route 2 _H
<i>Systematic Safety Integrity</i>	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 Test.		

SIL classification according to Standard IEC EN 61508 for Trunnion Side Entry Ball Valves Series 7TSE produced by Koso Parcol

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NOTE: The present table is integral part of the Document: C-IS-722246912-03

Date: April, 12th 2021