Italia

COMPLIANCE

with IEC EN 61508

Certificate No.: C-IS-722221214

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

WE HEREWITH CONFIRM THAT

CONTROL VALVES AND PNEUMATIC ACTUATORS

MEET THE SIL REQUIREMENTS DETAILED IN THE ANNEXED TABLES

FOR THE SAFETY FUNCTION:

***For Control Valves*: "Open and/or Close when required. In case of to Close Safety Function, valve leakage must be within limit values agreed with the Customer"**

***For Pneumatic Actuators*: "Proper valve acting when required"**

Examination result:	**The above reported Control Valves and Pneumatic Actuators were found to meet the standard defined requirements of the safety levels detailed in the following table (T-IS-722221214) according to IEC EN 61508, under fulfillment of the conditions listed in the Report R-IS-722221214 Rev.1 dated January, 28th 2021 in its currently valid version, on which this Certificate is based**
Examination parameters:	**Construction/Functional characteristics and reliability and availability parameters of the above Control Valves and Pneumatic Actuators**
Official Report No.:	**R-IS-722221214 Rev.1**
Expiry Date	**January, 27th 2024**

IT IS TO BE INTENDED THAT THE ABOVE OFFICIAL REPORT AND ITS ANNEXES ARE AN INTEGRAL PART OFTHIS DOCUMENT
THE PRESENT DOCUMENT SUBSTITUTES AND REPEALS THE DOCUMENT C-IS-722134012-01 REV.1

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

Sesto San Giovanni, January, 28th 2021

TÜV ITALIA Srl

TÜV Italia Srl Industrie Service Italia

TÜV ITALIA Srl
Industry Service Division
Technical Manager

Paolo Marcone

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SUMMARY TABLE

T-IS-722221214

E/EE/EP safety-related system (final element)	**Control Valves produced by Koso Parcol S.r.l.**
Models	1-4*, 1-5*, 1-6*, 1-7*, 1-8*, 1-9*
Size / Class	½" ≤ NPS ≤ 28" ANSI 150 to ANSI 2500
System type	Type A
Systematic Capability	*SC3*
Safety Function Definition	*"Open and/or Close when required. In case of to Close Safety Function, valve leakage must be within limit values agreed with the Customer"*
Max SIL(1)	**SIL3**
λ_{TOT}	3,406E-08
λ_{NE}	8,149E-09
λ_{S}	0,000E+00
$\lambda_{DD,PST}$(2)	1,555E-08
$\lambda_{DU,FPT}$	1,036E-08
β and β_D factor	10%
MRT	8 h
Hardware Safety Integrity	Route 2_H
Systematic Safety Integrity	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 Control Valves produced by Koso Parcol S.r.l.

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SUMMARY TABLE

T-IS-722221214

E/EE/EP safety-related system (final element)	**Pneumatic Actuators produced by Koso Parcol S.r.l.**
Models	1-X-210, 1-X-250, 1-X-290
Size	250 mm ≤ DN ≤ 600 mm
System type	Type A
Systematic Capability	*SC3*
Safety Function Definition	*"Proper valve acting when required"*
Max SIL(1)	**SIL3**
λ_{TOT}	2,572E-08
λ_{NE}	0,000E+00
	1,117E-08
λ_{S}	7,106E-09
$\lambda_{DD,PST}$(2)	4,606E-09
$\lambda_{DU,FPT}$	2,844E-09
β and β_D factor	10%
MRT	8 h
Hardware Safety Integrity	Route 2_H
Systematic Safety Integrity	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 Pneumatic Actuators produced by Koso Parcol S.r.l.

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