Certificate – Сертификат – 證明書 – Certificat – 증명서 – شهادة

SIL

Functional Safety Certificate

No. 3N210831.MIVTN42

Certificate's Holder: MECA-INOX VALVES (DaLian) CO., LTD.
No. 18# Building, Jingang Industrial Park, Dalian Economy & Technology Development Zone

Product: Ball Valves

Model(s): PS4, PZ4, PP4, PH4, PN4, PY4, PY4CY, MS4, MY4, R2S, R2Z, R2H, R2J, R2P

Standard: IEC 61508 Parts 1-7:2010,
IEC 62061:2005+AMD1:2012+AMD2:2015

And meets requirements providing a level of integrity to:
Systematic Capability: SC 3 (SIL 3 Capable)
Random Capability: Type A Element
SIL 3@HFT= 0; SIL 3@HFT=1; Route 2H

Verification Mark:

The Verification Mark can be affixed on the product. It is NOT permitted to alter the Verification Mark in any way

Remark: This SIL Verification of Compliance has been issued on a voluntary basis. ECM confirms that a Test Report is existent for the above listed product(s) and found to meet the requirements of above standards for application in safety related system up to Safety Level of **SIL 3**.
The unit must be properly designed into a Safety Instrument Function as per the requirements in the Safety Manual. The Verification Mark shown above can be affixed on the product. It is NOT permitted to alter the Verification Mark in any way. In addition the Verification's Holder is NOT allowed to transfer the Verification to third parties. This certificate can be checked for validity at www.entecerma.it

Date of issue 31 August 2021

Service Manager
Luca Pedroni

Expiry date 30 August 2026

Deputy Manager
Amanda Payne

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Annex I

No. 3N210831.MIVTN42

E/EE/EP safety-related system (final element)	MECA-INOX VALVES (DaLian) CO., LTD.
System type	Type A
Systematic Capability	SC3
Safety Function Definition	Correct switching on demand (open to closed and closed to open) in low demand mode of operation
Max SIL(1)	SIL3
λ_{TOT}	3,698E-07
λ_{SD}	7,198E-08
λ_{SU}	1,147E-07
$\lambda_{DD,PST}$(2)	1,731E-07
$\lambda_{DU,PST}$	1,002E-08
β and β_D factor	10%
MRT	24h
Hardware Safety Integrity	Route2H
Systematic Safety Integrity	Route2s

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.

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