

CERTIFICAT



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СЕРТИФИКАТ



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CERTIFICATE



ZERTIFIKAT



Italia

COMPLIANCE

with IEC EN 61508

Certificate No.: TUV IT 24 SIL 0469

CERTIFICATE OWNER: Atos S.p.A.
Via alla Piana 57
21018 Sesto Calende (VA)
Italy

WE HEREWITH CONFIRM THAT
INTRINSICALLY SAFE SOLENOID VALVES
DHW-* AND XXXXXXXX DHW-*, DHWL8 AND XXXXXXXX DHWL8
MEET THE SIL REQUIREMENTS DETAILED IN THE ANNEXED TABLES
FOR THE SAFETY FUNCTIONS:

SIF1: "Solenoid energization by external signal"

SIF2: "Solenoid de-energization by external signal"

Examination result: The above reported Solenoid Valves DHW-* and XXXXXXXX DHW-*, DHWL8 and XXXXXXXX DHWL8 were found to meet the standard defined requirements of the safety levels detailed in the following table according to IEC EN 61508, under fulfillment of the conditions listed in the Report R TUV IT 24 SIL 0400 in its currently valid version, on which this Certificate is based

Examination parameters: Construction/Functional characteristics and reliability and availability parameters of the above Solenoid Valves DHW-* and XXXXXXXX DHW-*, DHWL8 and XXXXXXXX DHWL8

Official Report No.: R TUV IT 24 SIL 0400

Expiry Date October, 11th 2027

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

THE PRESENT DOCUMENT SUBSTITUTES AND REPEALS THE DOCUMENT C-IS-722220682-01 REV.1

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

Milan, October, 10th 2024

TÜV ITALIA Srl



TÜV ITALIA Srl
Industrie Service Division
Managing Director

Alberto Carelli



SUMMARY TABLE

<i>E/EE/EP safety-related system (final element)</i>	Solenoid Valves DHW-* and XXXXXXX DHW-*, DHWL8 and XXXXXXX DHWL8 produced by Atos S.p.A.			
<i>System type</i>	Type A			
<i>Systematic Capability</i>	SC3			
<i>Safety Function Definition</i>	<i>SIF1: “Solenoid energization by external signal”</i>		<i>SIF2: “Solenoid de-energization by external signal”</i>	
<i>Max SIL⁽¹⁾</i>	SIL2 with HFT=0	SIL3 with HFT=1	SIL2 with HFT=0	SIL3 with HFT=1
λ_{TOT}	5,171E-10		5,171E-10	
λ_{NE}	0,000E+00		0,000E+00	
λ_{SD}	0,000E+00		0,000E+00	
λ_{SU}	4,240E-10		3,523E-10	
$\lambda_{DD,PST}^{(2)}$	0,000E+00		0,000E+00	
$\lambda_{DU,FPT}$	9,308E-11		4,804E-11	
<i>β and β_D factor</i>	10%		10%	
<i>MRT</i>	0,25 h		0,25 h	
<i>Hardware Safety Integrity</i>	Route 2 _H		Route 2 _H	
<i>Systematic Safety Integrity</i>	Route 2 _S		Route 2 _S	
Remarks <i>(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.</i> <i>(2) Considering an automatic Partial Stroke Test.</i>				

SIL classification according to Standard IEC EN 61508 (Chapters: 2, 4, 6, 7) for Solenoid Valves DHW-*, and XXXXXXXX DHW-*, DHWL8 and XXXXXXXX DHWL8 produced by Atos S.p.A.

NOTE: The present table is integral part of the Document: TUV IT 24 SIL 0469
Date: October, 10th 2024