

CERTIFICATE

This certifies, that the company

L&T Valves

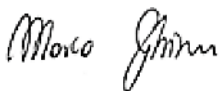
**L&T Campus, TC1 – 2nd Floor, Mount – Poonamallee Road
Manapakkam, Chennai – 600 089
India**

Is authorized to provide the product mentioned below

Description of product: **Gate Valves 0.25" ≤ DN ≤ 72" (Class 150 to 2500), - 196 Deg C to 649 Deg C, Fluid Oil and Gas**

In accordance with: **EN 61508:2010 Parts 2, 4**

Registration No 22 22770 02
Test Report No PS-22770-22-L-02
File reference 22770-02



TUV NORD Italia S.r.l. (TUV NORD Group)
Via Turati, 70 20023 Cerro Maggiore (MI) www.tuev-nord.it



Validity
from 2022-07-06
until 2025-07-05

Cerro Maggiore, 2022-07-06
prodotto@tuev-nord.it

Please also pay attention to the information stated overleaf

ANNEX

Annex 1, Page 2 of 2

To Certificate-Nr. 22 22770 02

Type	A
HFT	0
Safety functions	1. Correct switching on demand (open to closed) 2. Correct switching on demand (closed to open)
Mode of operation	Low Demand Mode

Random failure rates				
Configuration	Safety function	λ_{DU} [1/h]	λ_{DD} [1/h]	λ_S [1/h]
Bellow Seal – G1	1	4,21E-06	4,00E-06	0,00E+00
Bolted Bonnet – G2	1	4,56E-08	4,34E-08	0,00E+00
Extension Arrangement (Cryogenic) – G3	1	1,82E-05	1,73E-05	0,00E+00
Extension Spindle Arrangement – G4	1	1,64E-05	1,57E-05	0,00E+00
Pressure Seal – G5	1	6,69E-08	6,37E-08	0,00E+00
Underground – G6	1	1,70E-06	1,48E-06	0,00E+00
Bellow Seal – G1	2	5,33E-06	2,87E-06	0,00E+00
Bolted Bonnet – G2	2	5,78E-08	3,12E-08	0,00E+00
Extension Arrangement (Cryogenic) – G3	2	2,31E-05	1,24E-05	0,00E+00
Extension Spindle Arrangement – G4	2	2,09E-05	1,12E-05	0,00E+00
Pressure Seal – G5	2	8,48E-08	4,57E-08	0,00E+00
Underground – G6	2	2,11E-06	1,07E-06	0,00E+00

Systematic capability	3 (Route 2 _S applied)			
Architectural constraints	Route 1 _H :	N / A	Route 2 _H :	Applied
	<ul style="list-style-type: none"> See the relevant assessment report for the max SIL achievable. 			
Remarks:	<ul style="list-style-type: none"> For further details, including environmental conditions, limitations of use, lifetime, failure rates traceability, mean repair times, common cause factors and systematic capability constraints, make reference to Safety Manual. λ_{dd} is only accountable if partial valve stroke is implemented as external diagnostics. 			

