

This certifies, that the company

14 Dangdong 2-ro, Munsan-eup, Paju-si,
Gyeonggi-do Korea 10816

Is authorized to provide the product mentioned below

Description of product: **Turbine Bypass Stop Valves, mod. VS, VSO, VQS**

In accordance with: **EN 61508:2010 Parts 1, 2, 4**



Registration No 24 26027 01
Test Report No PS-26027-24-M-02
File reference 25210-01

Validity
from 2024-10-23
until 2026-12-18

Moro Jinn

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Type	A
HFT	0
Safety functions	1. Close / Open upon the demand of the actuation system
Mode of operation	Low Demand Mode

Random failure rates				
Configuration	Safety function	λ_{DU} [1/h]	λ_{DD} [1/h]	λ_S [1/h]
VS series - No Partial Stroke Test (PST)	1	5.424E-07	0,000E+00	5,892E-07
VS series - With Partial Stroke Test (PST)	1	2.694E-07	2.730E-07	5,892E-07

Systematic capability	3 (Route 1 _S and 2 _S applied)			
Architectural constraints	Route 1 _H :	Applied	Route 2 _H :	Applied
	The product can be used in: - single channel configuration: - up to SIL 2 without external diagnostic tests - up to SIL 3 considering external diagnostic tests - double channel configuration: up to SIL 3			
Remarks:	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 VS rev. 0			



PFD_{avg} values for different values of FPT test intervals, without Partial stroke test (PST)

VS	
Full Proof Test Interval [months]	
36	7.127E-03
33	6.533E-03
30	5.939E-03
27	5.345E-03
24	4.751E-03
21	4.157E-03
18	3.563E-03
15	2.970E-03
12	2.376E-03
9	1.782E-03
6	1.188E-03
3	5.939E-04

PFD_{avg} values for different values of FPT test intervals, with Partial stroke test (PST)

VS												
Full Proof Test Interval [months]	36	33	30	27	24	21	18	15	12	9	6	3
36	3.640E-03	3.739E-03	3.839E-03	3.939E-03	4.038E-03	4.138E-03	4.238E-03	4.337E-03	4.437E-03	4.537E-03	4.636E-03	4.736E-03
33	3.345E-03	3.444E-03	3.544E-03	3.644E-03	3.743E-03	3.843E-03	3.943E-03	4.042E-03	4.142E-03	4.241E-03	4.341E-03	4.441E-03
30	3.050E-03	3.149E-03	3.249E-03	3.349E-03	3.448E-03	3.548E-03	3.648E-03	3.747E-03	3.847E-03	3.946E-03	4.046E-03	4.146E-03
27	2.755E-03	2.854E-03	2.954E-03	3.054E-03	3.153E-03	3.253E-03	3.353E-03	3.452E-03	3.552E-03	3.651E-03	3.751E-03	3.851E-03
24	2.460E-03	2.559E-03	2.659E-03	2.759E-03	2.858E-03	2.958E-03	3.058E-03	3.157E-03	3.257E-03	3.356E-03	3.456E-03	3.556E-03
21	2.165E-03	2.264E-03	2.364E-03	2.464E-03	2.563E-03	2.663E-03	2.763E-03	2.862E-03	2.962E-03	3.061E-03	3.161E-03	3.261E-03
18	1.870E-03	1.969E-03	2.069E-03	2.169E-03	2.268E-03	2.368E-03	2.468E-03	2.567E-03	2.667E-03	2.766E-03	2.866E-03	2.966E-03
15	1.575E-03	1.674E-03	1.774E-03	1.874E-03	1.973E-03	2.073E-03	2.173E-03	2.272E-03	2.372E-03	2.471E-03	2.571E-03	2.671E-03
12	1.280E-03	1.379E-03	1.479E-03	1.579E-03	1.678E-03	1.778E-03	1.877E-03	1.977E-03	2.077E-03	2.176E-03	2.276E-03	2.376E-03
9	9.847E-04	1.084E-03	1.184E-03	1.284E-03	1.383E-03	1.483E-03	1.582E-03	1.682E-03	1.782E-03	-	-	-
6	6.897E-04	7.893E-04	8.889E-04	9.886E-04	1.088E-03	1.188E-03	-	-	-	-	-	-
3	3.946E-04	4.943E-04	5.939E-04	-	-	-	-	-	-	-	-	-
	1	2	3	4	5	6	7	8	9	10	11	12
Partial Stroke Test Interval [months]												

Legend			
SIL 4	SIL 3	SIL 2	SIL 1

