



Certificate / Certificat Zertifikat / 合格証

HAW 090233 C004

exida hereby confirms that the:

Butterfly Valves

**Hawa Valves (India) Pvt. Ltd.
Navi Mumbai, Rabale - India**

Have been assessed per the relevant requirements of:

IEC 61508 : 2010 Parts 1-7

and meets requirements providing a level of integrity to:

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type A, Route 2_H Device

**PFD_{AVG} and Architecture Constraints
must be verified for each application**

Safety Function:

The Butterfly Valve will move to the designed safe position per the actuator design within the specified safety time.

Application Restrictions:

The unit must be properly designed into a Safety Instrumented Function per the Safety Manual requirements.

The manufacturer
may use the mark:



Revision 4.0 October 15, 2020
Surveillance Audit Due
September 1, 2023



ISO/IEC 17065
PRODUCT CERTIFICATION BODY
#1004



Evaluating Assessor

Certifying Assessor

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Systematic Capability: SC 3 (SIL 3 Capable)**Random Capability: Type A, Route 2_H Device****PFD_{AVG} and Architecture Constraints
must be verified for each application****Systematic Capability :**

These products have met manufacturer design process requirements of Safety Integrity Level (SIL) 3. These are intended to achieve sufficient integrity against systematic errors of design by the manufacturer.

A Safety Instrumented Function (SIF) designed with this product must not be used at a SIL level higher than stated.

Random Capability:

The SIL limit imposed by the Architectural Constraints must be met for each element. This device meets *exida* criteria for Route 2_H.

IEC 61508 Failure Rates in FIT*

Static Application – Clean Service	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
Full Stroke - Concentric	0	0	0	740
Tight Shut-Off - Concentric	0	0	0	1699
Open on Trip - Concentric	0	197	0	543
Full Stroke – Double Offset	0	0	0	909
Tight Shut-Off - Double Offset	0	0	0	1662
Open on Trip - Double Offset	0	123	0	661
Full Stroke – Triple Offset	0	0	0	963
Tight Shut-Off - Triple Offset	0	0	0	1766
Open on Trip - Triple Offset	0	214	0	749

* FIT = 1 failure / 10⁹ hours

SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFD_{avg} considering 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 element must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

The following documents are a mandatory part of certification:

Assessment Report: HAW 09/02-33 R008 V4 R1 (or later)

Safety Manual: HV/PSM/01



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