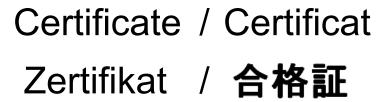


The manufacturer may use the mark:



Revision 2.2 December 5, 2022 Surveillance Audit Due October 1, 2025



VEL 1405020 C004

exida hereby confirms that the:

Coker Ball Valves

Velan

Montreal, QC - Canada

Has been assessed per the relevant requirements of:

IEC 61508: 2010 Parts 1-2

and meets requirements providing a level of integrity to:

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type A, Route 2_H Device

PFH/PFD_{avg} and Architecture Constraints must be verified for each application

Safety Function:

The 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.





Evaluating Assessor

Cho'B.

Certifying Assessor

Certificate / Certificat / Zertifikat / 合格証

VEL 1405020 C004

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type A, Route 2_H Device

PFH/PFD_{avg} and Architecture Constraints must be verified for each application

Systematic Capability:

The product has 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 FIT¹, Coker Ball Valves, Type K, Clean Service

| Application | λ _{SD} | λ _{su} | $\lambda_{	extsf{DD}}$ | λ _{DU} |
|--------------------------|-----------------|-----------------|------------------------|-----------------|
| Full Stroke | 0 | 0 | 0 | 516 |
| Tight Shut Off | 0 | 0 | 0 | 1210 |
| Open on Trip | 0 | 199 | 0 | 348 |
| Full Stroke with PVST | 0 | 0 | 188 | 329 |
| Tight Shut Off with PVST | 0 | 0 | 188 | 1022 |
| Open on Trip with PVST | 199 | 0 | 188 | 160 |

¹ FIT = 1 failure / 10⁹ hours

PVST = Partial Valve Stroke Test of a final element Device

SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFH/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: VEL 14-05-020 Velan Assessment Report R003 V2R3 Safety Valves IEC 61508 Assessment (or later)

Safety Manual: SIL-CBV



Coker Ball Valves

80 N Main St Sellersville, PA 18960