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# COMPLIANCE

## with IEC EN 61508 and IEC EN 61511

**Certificate No.: TUV IT 23 SIL 0293 Rev.1**

| | |
|---|---|
| **CERTIFICATE OWNER:** | **BFE S.r.l.**<br>**via Tonale 70/A**<br>**24061 Albano S. Alessandro (BG)**<br>**Italy** |

**WE HEREWITH CONFIRM THAT**

**FLOATING BALL VALVES**

**TRUNNION BALL VALVES**

**GLOBE VALVES**

**GATE VALVES**

**MEET THE SIL REQUIREMENTS DETAILED IN THE ANNEXED TABLES**

**FOR THE SAFETY FUNCTIONS:**

***SIF1: "correct switching on demand (open to closed), and tight for closing phase, in low demand mode of operation"***

***SIF2: "correct switching on demand (closed to open), in low demand mode of operation"***

| | |
|---|---|
| **Examination result:** | **The above reported Valves were found to meet the standard defined requirements of the safety levels detailed in the following table) according to IEC EN 61508 and IEC EN 61511, under fulfillment of the conditions listed in the Report R TUV IT 26 SIL 0799 in its currently valid version, on which this Certificate is based** |
| **Examination parameters:** | **Construction/Functional characteristics and reliability and availability parameters of the above Valves** |
| **Official Report No.:** | **R TUV IT 26 SIL 0799** |
| **Expiry Date** | **October, 25th 2029** |

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

| | |
|---|---|
| **Reference Standard** | **IEC EN 61508:2010 Part 2, 4, 6, 7**<br>**IEC EN 61511:2016 Part 1, 2, 3** |

**Milan, October, 21st 2026**

**TÜV ITALIA Srl**

TÜV Italia Srl Industrie Service TÜV SÜD Italia

**TÜV ITALIA Srl**

**Alberto Carelli**
**Industry & Infrastructure**
**Managing Director**

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# SUMMARY TABLE

| | | |
|---|---|---|
| ***E/EE/EP safety-related system (final element)*** | **Floating Ball Valves produced by BFE S.r.l.** | |
| ***System type*** | Type A | |
| ***Systematic Capability*** | SC3 | |
| ***Safety Function Definition*** | *SIF1: "Correct switching on demand (open to closed) and tight for closing phase, in low demand mode of operation"* | *SIF2: "correct switching on demand (closed to open), in low demand mode of operation"* |
| ***Max SIL(1)*** | **SIL3** | **SIL3** |
| $\lambda_{TOT}$ | 3,145E-09 | 3,145E-09 |
| $\lambda_{NE}$ | 7,524E-10 | 1,076E-09 |
| $\lambda_{S}$ | 0,000E+00 | 0,000E+00 |
| $\lambda_{DD,PST}$(2) | 6,380E-10 | 1,523E-09 |
| $\lambda_{DU,FPT}$ | 1,754E-09 | 5,462E-10 |
| ***β and $\beta_D$ factor*** | 10% | 10% |
| ***MRT*** | 8 h | 8 h |
| ***Hardware Safety Integrity*** | Route $2_H$ | Route $2_H$ |
| ***Systematic Safety Integrity*** | Route $2_S$ | Route $2_S$ |

***Remarks***

*(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.*

*(2) Considering an automatic Partial Stroke Test.*

*SIL classification according to Standard IEC EN 61508 (Chapters: 2, 4, 6, 7) and IEC EN 61511 (Chapters: 1, 2, 3) for Floating Ball Valves produced by BFE S.r.l.*

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# SUMMARY TABLE

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|---|---|---|
| ***E/EE/EP safety-related system (final element)*** | **Trunnion Ball Valves produced by BFE S.r.l.** | |
| ***System type*** | Type A | |
| ***Systematic Capability*** | *SC3* | |
| ***Safety Function Definition*** | *SIF1: "Correct switching on demand (open to closed) and tight for closing phase, in low demand mode of operation"* | *SIF1: "Correct switching on demand (open to closed) and tight for closing phase, in low demand mode of operation"* |
| ***Max SIL(1)*** | **SIL3** | **SIL3** |
| $\lambda_{TOT}$ | 2,046E-08 | 2,046E-08 |
| $\lambda_{NE}$ | 4,896E-09 | 7,000E-09 |
| $\lambda_{S}$ | 0,000E+00 | 0,000E+00 |
| $\lambda_{DD,PST}$(2) | 4,151E-09 | 9,907E-09 |
| $\lambda_{DU,FPT}$ | 1,141E-08 | 3,554E-09 |
| ***β and $\beta_D$ factor*** | 10% | 10% |
| ***MRT*** | 8 h | 8 h |
| ***Hardware Safety Integrity*** | Route $2_H$ | Route $2_H$ |
| ***Systematic Safety Integrity*** | Route $2_S$ | Route $2_S$ |

***Remarks***

*(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.*

*(2) Considering an automatic Partial Stroke Test.*

*SIL classification according to Standard IEC EN 61508 (Chapters: 2, 4, 6, 7) and IEC EN 61511 (Chapters: 1, 2, 3) for Trunnion Ball Valves produced by BFE S.r.l.*

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# SUMMARY TABLE

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|---|---|---|
| ***E/EE/EP safety-related system (final element)*** | **Globe Valves produced by BFE S.r.l.** | |
| ***System type*** | Type A | |
| ***Systematic Capability*** | SC3 | |
| ***Safety Function Definition*** | *SIF1: "Correct switching on demand (open to closed) and tight for closing phase, in low demand mode of operation"* | *SIF2: "correct switching on demand (closed to open), in low demand mode of operation"* |
| ***Max SIL(1)*** | **SIL3** | **SIL3** |
| $\lambda_{TOT}$ | 6,124E-08 | 6,124E-08 |
| $\lambda_{NE}$ | 1,465E-08 | 2,095E-08 |
| $\lambda_{S}$ | 0,000E+00 | 0,000E+00 |
| $\lambda_{DD,PST}$(2) | 1,242E-08 | 2,965E-08 |
| $\lambda_{DU,FPT}$ | 3,416E-08 | 1,064E-08 |
| ***β and $\beta_D$ factor*** | 10% | 10% |
| ***MRT*** | 8 h | 8 h |
| ***Hardware Safety Integrity*** | Route $2_H$ | Route $2_H$ |
| ***Systematic Safety Integrity*** | Route $2_S$ | Route $2_S$ |

***Remarks***

*(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.*

*(2) Considering an automatic Partial Stroke Test.*

*SIL classification according to Standard IEC EN 61508 (Chapters: 2, 4, 6, 7) and IEC EN 61511 (Chapters: 1, 2, 3) for Globe Valves produced by BFE S.r.l.*

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# SUMMARY TABLE

| | | |
|---|---|---|
| ***E/EE/EP safety-related system (final element)*** | **Gate Valves produced by BFE S.r.l.** | |
| ***System type*** | Type A | |
| ***Systematic Capability*** | SC3 | |
| ***Safety Function Definition*** | *SIF1: "Correct switching on demand (open to closed) and tight for closing phase, in low demand mode of operation"* | *SIF2: "correct switching on demand (closed to open), in low demand mode of operation"* |
| ***Max SIL(1)*** | **SIL3** | **SIL3** |
| $\lambda_{TOT}$ | 7,439E-08 | 7,439E-08 |
| $\lambda_{NE}$ | 1,780E-08 | 2,545E-08 |
| $\lambda_{S}$ | 0,000E+00 | 0,000E+00 |
| $\lambda_{DD,PST}$(2) | 1,509E-08 | 3,602E-08 |
| $\lambda_{DU,FPT}$ | 4,150E-08 | 1,292E-08 |
| ***β and $\beta_D$ factor*** | 10% | 10% |
| ***MRT*** | 8 h | 8 h |
| ***Hardware Safety Integrity*** | Route $2_H$ | Route $2_H$ |
| ***Systematic Safety Integrity*** | Route $2_S$ | Route $2_S$ |

***Remarks***

*(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.*

*(2) Considering an automatic Partial Stroke Test.*

*SIL classification according to Standard IEC EN 61508 (Chapters: 2, 4, 6, 7) and IEC EN 61511 (Chapters: 1, 2, 3) for Gate Valves produced by BFE S.r.l.*

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