SIL

Functional Safety Certificate

No. 1N190401.BJAS034

Technical Construction File no. SIL-CLKIN18(BAB)-04

Certificate's Holder:

Beijing Airport Beiguang Instruments Co.,Ltd A7,Tianzhu West Road,Area A,Tianzhu Airport Economic

Development Zone, Beijing

Product: Variable Area Flowmeters

Model(s): F56

Standard: Has 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 2 (SIL 2 Capable) Random Capability: Type A Element SIL 2 @ HFT= 0; SIL 3@ HFT=1; Route 2_H

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

* Safety Function:

The metal rotor flowmeter is a type of variable-area flowmeter. In a vertical cone tube expanded from the bottom to the top, the gravity of the circular cross-section float is borne by the liquid power, and the float can freely rise and fall in the cone tube

 * Is suitable to be safety function according to the description and the configuration defined in Annex I.

Verification Mark:



The Verification Mark can be affixed on the product. It is NOT permitted to alter the Verification Mark in any way

Remark: This SIL Verification of Compliance has been issued on a voluntary basis. ECM confirms that a Test Report is existent for the above listed product(s) and found to meet the requirements of above standards for application in safety related system up to Safety Level of SIL 2.

The unit must be properly designed into a Safety Instrument Function as per the requirements in the Safety Manual. The Verification Mark shown above can be affixed on the product. It is NOT permitted to alter the Verification Mark in any way. In addition the Verification's Holder is NOT allowed to transfer the Verification to third parties. This certificate can be checked for validity at www.entecerma.it

Date of issue 02 April 2019

Chief Manager Marco Morina Expiry date 01 April 2024

Deputy Manager Amanda Payne

Annex I



No. 1N190401.BJAS034

Technical Construction File no. SIL-CLKIN18(BAB)-04

- 1. The use of the product must obey the required rules to conservation of SIL2 properties, these rules are recalled in the §6 of the Assessment Report reference: [SIL Capability assessment report]
- 2. The product version of hardware components used for validation and type tests are the following:

Component	Model
Variable Area Flowmeters	F56

- Acceptable environmental constraints for the system are recalled in the safety Manual. These
 elements must be checked for each integration operation of the product.
- 4. The SIL 2 capable certified Safety Instrumented Function of product is the following:
 - 1. SF1: To Close on demand.
 - 2. SF2: To Open on demand.
- 5. Hypothesis used for calculations are presented here under: The mode of operation is Low demand, which means less than 1 trip demand each year;

Component architecture	SIL Capability	Demand frequency	PFD		
1001 configuration	SIL2	Low	9.97E-04		
1002 configuration	SIL3	Low	2.19E-04		

Safety function	Failure rate	Undetected dangerous failure rate	Tests intervals	MTTR
SF1	4.89E-05	4.56E-07	11months	48h
SF2	4.86E-05	4.53E-07	11months	48h

6. The Safety Integrated Level of the safety function using the product shall be calculated taking into account the characteristics of the whole system.

s be your partin