

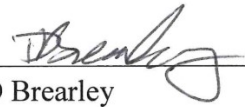


CERTIFICATION REPORT

18(C)0828

REPORT ON. ATEX Vortex A/C Enclosure Cooler
DATED 14 February 2020
REGISTRATION No. 7231
CUSTOMER ITW Air Management
ADDRESS 10125 Carver Road, Cincinnati, Ohio, 45242, USA

Prepared by: 
M Needham
Certification Engineer

Checked and Approved by: 
D Brearley
Certification Manager

Where values of uncertainty of measurement are given, these are expressed at the 95% confidence level unless otherwise stated.

This document is issued by the Company subject to its General Conditions for Certification Services accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and the Supplementary Terms and Conditions accessible at <http://www.sgs.com/SGSBaseefa/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. It does not necessarily indicate that the equipment may be used in particular industries or circumstances. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS Baseefa Limited

Rockhead Business Park, Staden Lane,
Buxton, Derbyshire SK17 9RZ

Telephone +44 (0) 1298 766600 Fax +44 (0) 1298 766601

e-mail Baseefa@sgs.com web site www.sgs.co.uk/sgsbaseefa

Registered in England No. 4305578.

Registered address: Rossmore Business Park, Ellesmere Port, Cheshire, CH65 3EN

INDEX FOR CERTIFICATION REPORT 18(C)0828

<u>Section</u>	<u>Page</u>
Assessment narrative and conclusions	3

Compliance checklists

Baseefa tests

None

The signatures, date and other information on the cover sheet apply to all the above.

Those signing the front sheet of this report do so on behalf of SGS Baseefa Ltd.

<u>Annexed Documents</u>	<u>No. of Pages</u>
--------------------------	---------------------

Baseefa reports and Baseefa subcontractors reports with own cover

None

Manufacturer supplied reports and information

None

Other reports and information

None

Responsibility for individual documents remains with the originator of the individual document.

1. INTRODUCTION

This report covers the assessment of the ATEX Vortex A/C Enclosure Cooler against the requirements of EN 80079-36:2016 and the ATEX Directive 2014/34/EU, in support of Category 3GD certificate Baseefa14ATEX0267X.

2. DESCRIPTION

“ATEX Vortex A/C” enclosure coolers are compressed air powered devices that are intended to cool electronic/electrical enclosures that are located in Zone 2 and Zone 22 areas. The products will be classified as Group II Category 3 equipment.

There are no electric/electronic components in these products—they are purely mechanical devices—they are entirely non-electrical. The cooling that they produce is driven by an internal vortex tube which is located inside of an ATEX certified non-metallic carbon loaded enclosure, which serves as the external housing for the product. (A vortex tube is a compressed air powered device that has no moving parts. From a high pressure (6.2 to 6.9 bar) clean and dry compressed air source, the vortex tube creates a cold air stream and a hot air stream, both of these air streams are at low pressure-less than .2 bar.) The vortex tube’s cold air stream is directed inside the (customer’s) protected enclosure while the hot air stream is exhausted outside of the ATEX Vortex A/C to the ambient environment. The hot exhaust air is vented out of the ATEX Vortex A/C through an opening in the non-metallic housing. The opening in the non-metallic housing is protected from jets of water and dust by a baffled shroud on the back of the product. The ATEX Vortex A/C is mounted directly on the top or side of the enclosure to be cooled via a 49mm diameter hole (two holes are required for the 7370/7470/7370BSP/7470BSP models) in the enclosure. A nitrile gasket between the ATEX Vortex A/C and the enclosure maintains an air and liquid tight seal at this interface. The cold airstream is directed inside the enclosure through a one-way check valve and then through a “cold air ducting kit” which can be used to distribute the cold air evenly throughout the enclosure, if desired. As the cold air stream cools the air inside the enclosure, it loses its refrigeration ability and warms up. This warmer air must be vented outside of the protected enclosure so as not to over-pressurize the enclosure. When the ATEX Vortex A/C is not providing cooling (see below), the air path through the cold outlet of the unit is closed off and sealed via the one-way check valve on the unit.

The ATEX Vortex A/C utilizes a built-in mechanical thermostat (thermal actuator) that monitors and controls the temperature inside the customer’s enclosure within a set temperature range. The thermostat senses the temperature inside the enclosure and then opens or closes an internal valve that controls the compressed air flow to the internal vortex tube. When high temperatures (32 to 38°C) inside the customer’s enclosure are sensed, the thermal actuator opens the internal valve which allows compressed air to flow into the vortex tube and start cooling the enclosure. Once the temperature inside the enclosure drops to approximately 25 to 28°C, the thermal actuator closes the valve and the compressed air flow to the vortex tube is stopped, therefore stopping the flow of cold air into the protected enclosure. At this point, the purge system maintains a safe level of enclosure pressure.

The main ignition source from the ATEX Vortex A/C is from the hot air exhaust temperatures that it can develop. The temperature of the hot air exhaust is dependent on the temperature and the pressure of the compressed air that is supplied to the product. When the compressed air pressure is limited to a maximum of 6.9 bar (100 psig) and a maximum temperature of 49°C (120°F), then the hot exhaust air temperature and corresponding surface temperatures on or inside the product will not exceed 135°C (275°F). This corresponds to a temperature classification of T4. It is imperative that the compressed air supply conditions be stated and adhered to.

The ATEX Vortex A/C is available in four different cooling capacities: 900, 1500, 2500 and 5000 BTUH (264, 440, 732 and 1465 watts). Sixteen different models are offered:

<u>Model No.</u>	<u>Cooling Capacity (BTUH)</u>	<u>Compressed air inlet thread size and type</u>	<u>Compressed Air Consumption (scfm)</u>	<u>Supplied with a compressed air filter?</u>
7315	900	3/8" NPT	15	No
7415	900	3/8" NPT	15	Yes
7325	1500	3/8" NPT	25	No
7425	1500	3/8" NPT	25	Yes
7335	2500	3/8" NPT	35	No
7435	2500	3/8" NPT	35	Yes
7370	5000	3/8" NPT	70	No
7470	5000	3/8" NPT	70	Yes
7315BSP	900	3/8" BSPP	15	No
7415BSP	900	3/8" BSPP	15	Yes
7325BSP	1500	3/8" BSPP	25	No
7425BSP	1500	3/8" BSPP	25	Yes
7335BSP	2500	3/8" BSPP	35	No
7435BSP	2500	3/8" BSPP	35	Yes
7370BSP	5000	3/8" BSPP	70	No
7470BSP	5000	3/8" BSPP	70	Yes

3. VARIATION

The manufacturer requests the following variations:

- 3.1 To assess the ATEX Vortex A/C Enclosure Cooler against the following standard:
EN 80079-36:2016.
- 3.2 Minor amendment to the description correcting the seal material from neoprene to nitrile.

4. DRAWINGS

The drawings shown below are those finally presented for certification following discussions to ensure that the appropriate information and detail is provided to verify compliance and to reflect the results of the assessment detailed in the following sections of this report.

<u>Number</u>	<u>Sheet</u>	<u>Issue</u>	<u>Date</u>	<u>Description</u>
7300-63	1 of 1	G	1/2020	ATEX Vortex A/C Data Label

5. ASSESSMENTS AND TESTS

5.1 Assessment against the requirements of EN 80079-36:2016

The following clauses address the major technical changes which affect the equipment, the changes between the EN 13463-1:2009 and EN ISO 80079-37:2016 are as follows.

Clause 4.1 – EPL and equipment groups.

The manufacturer has provided drawing number 7300-63, the drawing includes the updated marking as per the requirements of this standard. The extension of this clause to include the EPL (Equipment protection Level) has been satisfied. The equipment is now marked with EPL Gc Dc. A copy of the drawing is held on the technical file associated with certificate number Baseefa14ATEX0267X.

Clause 5.1 – General Requirements

The manufacturer has provided documentation which is considered to be full and specific to the type of protection offered by the equipment. The instructions include details shown on clause 10 of this standard. No further assessment was deemed necessary, a copy of the updated instruction manual is held on the technical file associated with certificate number Baseefa14ATEX0267X.

Clause 11- Marking

Drawing number 7300-63 has been updated to include the appropriate marking as required by this standard. The equipment can now be marked as follows:

⊕ II 3GD Ex h IIC T4 Gc Ex h IIIC T135 Dc -20°C to +80°C

Other than the fore mentioned, there are no further technical changes within this standard which affects the equipment's compliance.

5.2 Minor amendment to the description.

The description has been amended to make a correction in the seal material from neoprene to nitrile. See section 2 above for the amended description.

6. Essential Health and Safety requirements

Clause	ATEX Essential Health and Safety requirements not fully covered by standards	Result – Remark	Verdict
1.0.1 indent 1	Prevent formation of Explosive Atmospheres	Not applicable to equipment other than where specifically mentioned, e.g. batteries (and then covered by the standards)	N/A
1.0.1 indent 3	Mitigate an explosion	Applies only to Protective Systems	N/A
1.0.5 indent 2	Application of CE Marking	Cannot be covered by certification as this is manufacturers' responsibility based on the application of one or more EU Directives	N/A
1.0.6 a) first level indent 3	Mark danger areas in front of pressure relief devices	Applies only to Protective Systems	N/A
1.0.6 c)	Literature must not contradict the instructions	Cannot be covered by certification – manufacturers' sole responsibility	N/A
1.2.3	Enclosed structures to prevent leaks	Not applicable to electrical equipment generally	N/A
1.2.7	LVD type requirements	Standards require manufacturer's declaration, supplied.	N/A
1.2.8	Overloading of equipment (protection relays, etc.)	Covered by installation rules and manufacturer's instructions	N/A
1.3.5	Hazards from Pressure Compensation	Not applicable to electrical equipment generally	N/A
1.4.1	External effects	The Purchaser should make the manufacturer aware of such issues. Covered in Instructions	Pass
1.4.2	Aggressive substances, etc.	The Purchaser should make the manufacturer aware of such issues. Covered in Instructions	Pass
1.5	Safety related devices	Not directly applicable to equipment in the scope of EN 60079-0	N/A
1.6.1	Manual Override to ensure safety of systems	Not directly applicable to equipment in the scope of EN 60079-0	N/A
1.6.3	Hazards from Power Failure	Not directly applicable to equipment in the scope of EN 60079-0	N/A
1.6.5	Placing of Warning Devices	Not directly applicable to equipment in the scope of EN 60079-0	N/A
3	Protective Systems	Not directly applicable to equipment in the scope of EN 60079-0	N/A

Measurement Section, including Additional Narrative Remarks (as deemed applicable)

All Essential Health and Safety Requirements (EHSRs) of Directive 2014/34/EU are addressed by the standards referenced above, by manufacturer's declaration (where permitted) or by installation instructions.

In addition to the EHSRs addressed above, the following information is relevant:

7. CONCLUSIONS

The ATEX Vortex A/C Enclosure Cooler as defined in Section 2 of this report are deemed to comply with the relevant requirements of BS EN ISO 80079-36 and EU-Directive 2014/34/EU, as set out in Section 4 of this report.