



- (2) **Equipment and protective systems intended for use in potentially explosive atmospheres
Directive 94/9/EC**

(1) **EC-TYPE EXAMINATION CERTIFICATE**

- (3) Number of the EC type examination certificate: **INERIS 06ATEX0018**

- (4) Equipment or protective system:

RADIATOR TYPE RC375....

- (5) Manufacturer: **AMARC**

- (6) Address: **Via Lovati, 29
I - 20045 Besana Brianza (MI)**

- (7) This equipment or protective system and any other acceptable alternative of this one are described in the annex of this certificate and the descriptive documents quoted in this annex.

- (8) The INERIS, notified body and identified under number 0080, in accordance with article 9 of Council Directive 94/9/EC of the 23rd March 1994, certifies that this equipment or protective system fulfils the Essential of Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, described in annex II of the Directive.

The examinations and the tests are consigned in confidential report No P64850/06.

- (9) The respect of the Essential Health and Safety Requirements is ensured by:

- conformity with:

EN 50 014 of June 1997 + Amendments 1 and 2
EN 50 018 of November 2000 + Amendment 1
EN 50 281-1-1 of September 1998 + Amendment 1


- specific solutions adopted by the manufacturer to meet the Essential Health and Safety Requirements described in the descriptive documents.

- (10) Sign X, when it is placed following the Number of the EC type examination certificate, indicates that this equipment and protective system is subjected to the special conditions for safe use, mentioned in the annex of this certificate.
- (11) This EC type examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system, these are not covered by this certificate.
- (12) The marking of the equipment or the protective system will have to contain:

 II 2 G

EEx d IIC T1 to T5

or

 II 2 GD

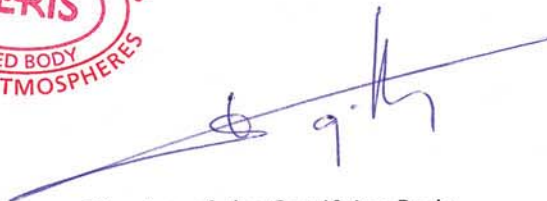
EEx d IIC T3 to T5 IP66 T200°C to T100°C

Verneuil-en-Halatte, 2006 03 20



C. PETITFRERE

Project Manager at the ATEX
Equipment Certification Laboratory



Director of the Certifying Body,
By delegation
B. PIQUETTE
Deputy Manager of Certification

(13) **A N N E X**

(14) **EC TYPE EXAMINATION CERTIFICATE N° INERIS 06ATEX0018**

(15) **DESCRIPTION OF THE EQUIPMENT OR THE PROTECTIVE SYSTEM**

The radiator consists of a terminal box, with various sizes, fitted with resistance heating device intended to be submerged.

The terminal box can be fixed either directly on the material or through an extension fitted with a plate, this part is a cold zone.

Two thermal probes control the temperature resistance.

The enclosure gets the protection degrees IP65 according to the European standard EN 60 529.

PARAMETERS RELATING TO THE SAFETY

Supply voltage	:	from 24 to 700 V
Frequency	:	50/60 Hz
Current density	:	0.8 A/mm ²
Maximum power	:	1755 kW
Condensation-resistor power	:	from 60 to 120 W

The various powers are a function of the size of the terminal box, the temperature of the fluid and length of the extension. The various sizes and powers are defined in the descriptive documents.

Characteristic of thermal probes

Threshold of release	:	90°C ± 5°C for class T5 or T100°C
Threshold of release	:	130°C ± 5°C for class T4 or T135°C
Threshold of release	:	195°C ± 5°C for class T3 or T200°C
Threshold of release	:	285°C ± 5°C for class T2
Threshold of release	:	435°C ± 5°C for class T1

MARKING

Marking has to be readable and indelible; it has to include the following indications:

AMARC


I - 20045 Besana Brianza (MI)

RC375....

INERIS 06ATEX0018

(Serial number)

(Year of construction)

 II 2 G

EEx d IIC T (*)

T.cable : (*)

DO NOT OPEN WHEN ENERGIZED

DO NOT OPEN IF AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT

(*) The temperature class T1 to T5 and the cable gland temperature are stipulated on the descriptive documents in accordance with the manufacturing variation.

Or

AMARC


I - 20045 Besana Brianza (MI)

RC375....

INERIS 06ATEX0018

(Serial number)

(Year of construction)

 II 2 GD

EEx d IIC T(*)

T(*) IP 66

T.cable : (*)

DO NOT OPEN WHEN ENERGIZED

DO NOT OPEN IF AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT

(*) The temperature class T3 to T5 or T200°C to T100°C and the cable gland temperature are stipulated on the descriptive documents in accordance with the manufacturing variation.

Marking may be carried out in the language of the country of use.

The protective system or equipment has also to carry the marking normally stipulated by its construction standards.

ROUTINE EXAMINATIONS AND TESTS

Each equipment defined above have to successfully passed the following individual tests before delivery :

In accordance with clause 16.1 of the EN 50 018 standard, an overpressure test of a period comprised between 10 and 60 seconds under :

- 20 bar for model 03 to 14
- 13.7 bar for model 16, 18 and 20

(16) DESCRIPTIVE DOCUMENTS

The descriptive documents quoted hereafter constitute the technical documentation of the equipment, subject of this certificate.

- Certification file n° RC 946/29 rev. 2 of 2006.03.24

This file signed on 2006.03.31 included 21 items.

(17) SPECIAL CONDITIONS FOR SAFE USE

The special conditions are stipulated on the instructions.

(18) ESSENTIAL SAFETY AND HEALTH REQUIREMENTS

The respect of the Essential Health and Safety Requirements is ensured by:

- Conformity to the European standards EN 50 014, EN 50 018 and EN 50 281-1-1.
- All provisions adopted by the manufacturer and defined in the descriptive documents.

ADDITION

(3) INERIS 06ATEX0018/01

(4) RADIATOR TYPE RC375...

(5) Made by AMARC

(15) PURPOSE OF THE ADDITION

- Application of new standards EN 60079-0 : 2006, EN 60079-1 : 2004, EN 61241-0 : 2006, and EN 61241-1 : 2004.
- Use in group I.
- Possibility to use this radiator in an ambient temperature of 60°C.
- This radiator can also be used to heat a gas.

PARAMETERS RELATING TO THE SAFETY

The parameters relating to the safety are completed as follows for group I :

Supply voltage	:	from 24 to 700 V
Frequency	:	50/60 Hz
Current density	:	0.8 A/mm ²
Maximum power	:	1755 kW
Condensation-resistor power	:	from 60 to 120 W

The various powers are function of the terminal box size, the fluid temperature and extension length. The various sizes and powers are defined in the descriptive documents.

Threshold of release of thermal probe : 125°C ± 5°C

MARKING

The marking is modified as follows:

A - Radiator for use in group IIC :

AMARC
I - 20045 Besana Brianza (MI)
RC375...
INERIS 06ATEX0018
(Serial number)
(Year of construction)

⊕ Ex II 2 G

Ex d IIC T (*)

T.cable : (*)

T.amb : (**)

WARNINGS :

DO NOT OPEN WHEN ENERGIZED
DO NOT OPEN IF AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT

(*) The temperature class T1 to T5 and the cable gland temperature are stipulated on the descriptive documents in accordance with the manufacturing variation and the ambient temperature.

(**) Ambient temperature range if differs from -20°C to 40°C.

Or

AMARC

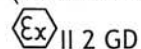
I - 20045 Besana Brianza (MI)

RC375....

INERIS 06ATEX0018

(Serial number)

(Year of construction)

 Ex II 2 GD

Ex d IIC T (*)

Ex tD A21 IP66 T (*)

T.cable : (*)

T.amb : (**)

WARNINGS :

DO NOT OPEN WHEN ENERGIZED
DO NOT OPEN IF AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT

(*) The temperature class T3 to T5 (gas) or T200°C to T100°C (dust) and the cable gland temperature are stipulated on the descriptive documents in accordance with the manufacturing variation and the ambient temperature.

(**) Ambient temperature range if differs from -20°C to 40°C.

B - Radiator for use in group I :

AMARC

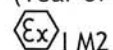
I - 20045 Besana Brianza (MI)

RC375....

INERIS 06ATEX0018

(Serial number)

(Year of construction)

 Ex I M2

Ex d I

T.cable : (*)

T.amb : (**)

WARNINGS :

DO NOT OPEN WHEN ENERGIZED
DO NOT OPEN IF AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT

(*) The surface temperature is 150°C and the cable gland temperature are stipulated on the descriptive documents in accordance with the manufacturing variation and the ambient temperature.

(**) Ambient temperature range if differs from -20°C to 40°C.

Marking may be carried out in the language of the country of use.

The protective system or equipment has also to carry the marking normally stipulated by its construction standards.

ROUTINE EXAMINATIONS AND TESTS

The routine examinations and tests are modified as follows:

Each equipment defined above have to successfully passed the following individual tests before delivery, in accordance with clause 16.1 of the EN60079-1 standard, an overpressure test of a period comprised between 10 and 60 seconds under :

- 20 bar for model 03 to 14
- 13.7 bar for model 16, 18 and 20

(16) DESCRIPTIVE DOCUMENTS

The descriptive document quoted hereafter constitute the technical documentation describing the modifications of the equipment, subject of this present addition.

- Certification file RC 946/29 rev.3 of 2007.11.19 (24 rubrics) signed on 2007.11.19.

(17) SPECIAL CONDITIONS FOR SAFE USE

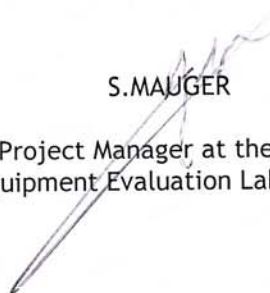
The conditions are stipulated in the instructions.

(18) ESSENTIAL SAFETY AND HEALTH REQUIREMENTS

The respect of the Essential Health and Safety Requirements is completed as follows:

- Conformity to the European standards EN 60 079-0, EN 60 079-1, EN 61241-0 and EN 61241-1.
- All provisions adopted by the manufacturer and defined in the descriptive documents.

Verneuil-en-Halatte, 2007 12 19


S.MAUGER
Project Manager at the ATEX
Equipment Evaluation Laboratory




Director of the Certifying Body,
By delegation
T. HOUEIX
Certification Officer
Certification Division

ADDITION

(3) INERIS 06ATEX0018/02

(4) RADIATOR TYPE RC375...

(5) Made by AMARC

(15) PURPOSE OF THE ADDITION

- New manufacturer address "37 Via Artigiani, I-23874 Montevécchia" instead of " 29 Via Lovati, I-20045 Besana Brianza (MI)".
- Possibility to use the radiator in the minimum ambient temperature of -60°C.
- Application of EN 60079-0 : 2009, EN 60079-1 : 2007 and EN 60079-31 : 2009 standards.
- Possibility to mount the radiator on horizontal position.
- Introduction of the temperature class T6 or T85°C.

PARAMETERS RELATING TO THE SAFETY

The parameters relating to the safety are completed as follow:

For the type horizontal position:

- Maximum current density : 0.9 A/mm²

MARKING

The marking is modified as follow:

A- Radiator for use in group IIC:

AMARC


I-23874 Montevécchia

RC-375...

INERIS 06ATEX0018

(Serial number)

(year of construction)

 II 2 G

Ex d IIC T(*) Gb

T Cable : (*)

T.Amb (if different from -20°C to +40°C) : -60°C to +40°C or -60°C to +60°C
or -20°C to +60°C

WARNINGS : DO NOT OPEN IF AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT
CABLE ENTRIES : SEE INSTRUCTIONS
DO NOT OPEN WHEN ENERGIZED

(*) The temperature class T1 to T6 and the cable gland temperature are stipulated on the descriptive documents in accordance with the manufacturing variation and the ambient temperature

OR

AMARC

I-23874 Montevecchia

RC-375...

INERIS 06ATEX0018

(Serial number)

(year of construction)

⊕ Ex II 2 GD

Ex d IIC T(*) Gb

Ex tb IIIC T (*) °C Db IP66

T Cable : (*)

T.Amb (if different from -20°C to +40°C) : -60°C to +40°C or -60°C to +60°C
or -20°C to +60°C

WARNINGS : DO NOT OPEN IF AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT
CABLE ENTRIES : SEE INSTRUCTIONS
DO NOT OPEN WHEN ENERGIZED

(*) The temperature class T3 to T6 (gas) or T200°C to T85°C (dust) and the cable gland temperature are stipulated on the descriptive documents in accordance with the manufacturing variation and the ambient temperature

B- Radiator for use in group I:

AMARC

I-23874 Montevecchia

RC-375...

INERIS 06ATEX0018

(Serial number)

(year of construction)

⊕ Ex I M2

Ex d I 150°C Mb

T. Cable : (*)

T.Amb (if different from -20°C to +40°C) : -60°C to +40°C or -60°C to +60°C
or -20°C to +60°C

WARNINGS : DO NOT OPEN IF AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT
CABLE ENTRIES : SEE INSTRUCTIONS
DO NOT OPEN WHEN ENERGIZED

(*) The surface temperature is 150°C and the cable gland temperature are stipulated on the descriptive documents in accordance with the manufacturing variation and the ambient temperature

Marking may be carried out in the language of the country to use

The protective system or equipment has also to carry the marking normally stipulated by its constructive standards.

ROUTINE EXAMINATIONS AND TESTS

The routine examinations and tests are modified as follow:

In accordance with clause 16.1 of the EN 60079-1 standard each apparatus defined above has to have successfully passed before delivery, an overpressure test of a period comprised between 10 and 60 seconds under 21.45 bar.

(16) DESCRIPTIVE DOCUMENTS

The descriptive document quoted hereafter constitutes the technical documentation describing the modifications of the equipment, subject of this present addition:

- Certification file RC946/29 (17 items) from 2011.10.07 signed on 2011.10.07

(17) SPECIAL CONDITIONS FOR SAFE USE

None.

(18) ESSENTIAL SAFETY AND HEALTH REQUIREMENTS

The respect of the Essential Health and Safety Requirements is completed as follow:

- Conformity to the standards quoted on § (15) of this document.
- All provisions adopted by the manufacturer and defined in the descriptive documents.

Verneuil-en-Halatte, 2011.10.12



Director of the Certifying Body,
By delegation
T. HOUeix
Certification Officer
Certification Division

ADDITION

- (3) INERIS 06ATEX0018/03
- (4) RADIATOR TYPE RC 375...
- (5) Made by AMARC

(15) **PURPOSE OF THE ADDITION**

- Application of the following standards:
EN 60079-0 : 2012/A11: 2013 IEC 60079-0 : 2011.
EN 60079-31 : 2014 IEC 60079-31 : 2013.
- Modification of the electrical parameters.

PARAMETERS RELATING TO THE SAFETY

The parameters relating to the safety are modified as follows:

- Maximum supply voltage : 1000 V AC or 1500 V DC.
Frequency : 50/60 Hz.
Maximum dissipated power : 1755 kW.
Maximum current density : 0.8 A/mm²

Characteristics of the thermal probes:

- Threshold of release : 75°C ±5°C for class T6/T85°C.
Threshold of release : 90°C ±5°C for class T5/T100°C.
Threshold of release : 125°C ±5°C for class T4/T135°C and for group I.
Threshold of release : 190°C ±5°C for class T3/T200°C.
Threshold of release : 285°C ±5°C for class T2/T300°C.
Threshold of release : 435°C ±5°C for class T1/T450°C.

Characteristics of the anticondensation resistance:

Maximum dissipated power : from 60 W to 120 W in accordance of the size of the equipment.

This equipment is intended to be use in range of ambient temperatures from -20°C or -60°C to 40°C or 60°C.

MARKING

The marking is modified as follows:

A - Radiator for Group IIC and IIIC:

AMARC

I - 23874 Montevicchia (Lecco)

RC 375... (*)

INERIS 06ATEX0018X

(Serial number)

(Year of construction)



II 2 G Ex d IIC T6...T1 Gb



II 2 D Ex tb IIIC T85°C...T450°C Db

IP66

T.Cable : (**)

T.Amb : (***)

Cable entry: (see instructions)

WARNING: DO NOT OPEN IF AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT

- (*) The type is completed by a letters and numbers in accordance with the manufacturing variations.
- (**) The cable temperature and the temperature class T6...T1, T85°C...T450°C are stipulated in the descriptive documents in accordance with the ambient temperature and the manufacturing variations.
- (***) Range of ambient temperatures if different from -20°C to 40°C.

B - Radiator for Group I:

AMARC

I - 23874 Montevicchia (Lecco)

RC 375... (*)

INERIS 06ATEX0018X

(Serial number)

(Year of construction)



I M2

Ex d I Mb

IP66

T.Cable : (**)

T.Amb : (***)

Cable entry: (see instructions)

WARNING: DO NOT OPEN IF AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT

- (*) The type is completed by a letters and numbers in accordance with the manufacturing variations.
- (**) The maximum temperature is limited to 150°C and stipulated in the descriptive documents in accordance with the ambient temperature and the manufacturing variations.

(***) Range of ambient temperatures if different from -20°C to 40°C.

Marking may be carried out in the language of the country of use.

The protective system or equipment has also to carry the marking normally stipulated by its construction standards.

ROUTINE EXAMINATIONS AND TESTS

The routine tests are modified as follows:

In accordance with clause 16.1 of the EN/IEC 60079-1 standard each apparatus defined above has to have successfully passed, before delivery, an overpressure test of a period comprised between 10 and 60 seconds under 21.5 bar.

(16) DESCRIPTIVE DOCUMENTS

The descriptive document quoted hereafter constitutes the technical documentation describing the modifications of the equipment, subject of this present addition.

Certification file n° RC946/29 rev.5 of 2015.09.16 (27 rubrics) signed on 2015.09.16

(17) SPECIAL CONDITIONS FOR SAFE USE

The width of the flameproof joints is superior to that specified in the tables of EN/IEC 60079-1 standard.

(18) ESSENTIAL SAFETY AND HEALTH REQUIREMENTS

The respect of the Essential Health and Safety Requirements is modified as follows:

- Conformity to the following standards :
 - EN 60079-0 : 2012/A11: 2013 IEC 60079-0 : 2011
 - EN 60079-1 : 2007 IEC 60079-7 : 2007
 - EN 60079-31 : 2014 IEC 60079-31 : 2013
- All provisions adopted by the manufacturer and defined in the descriptive documents.

Verneuil-en-Halatte, 2015.10.12



A handwritten signature in blue ink, appearing to read "Thierry Houeix".

The Chief Executive Officer of INERIS
By delegation

Thierry HOUeix
Délégué Certification ATEX
Ex Certification Officer