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Schema di certificazione
CESI-ATEX

CERTIFICATE



[1] SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE

[2] **Equipment or Protective System intended for use
in potentially explosive atmospheres
Directive 2014/34/EU**

[3] Supplementary EU-Type Examination Certificate number:

CESI 07 ATEX 055 X /02

[4] **Product: Submersible electric pumps for drainage series "Derby EX"
and "ID Derby EX"**

[5] **Manufacturer: Officine di Trevi S.a.s.**

[6] **Address: SS n. 3 "Flaminia", km. 145
I-06032 Trevi - PG
Italia**

[7] This supplementary certificate extends EC-Type Examination Certificate CESI 07 ATEX 055 X to apply to Product designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

[8] CESI, notified body n. 0722 in accordance with Article 17 of the Directive 2014/34/EU of the Parliament and Council of 26 February 2014, certifies that this Product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment or protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report n. EX-C0014098.

[9] In accordance with Article 41 of Directive 2014/34/EU, EC-Type Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Supplementary certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20 April 2016.

[10] If the sign "X" is placed after the certificate number, it indicates that the Product in subject to special conditions for safe use specified in the schedule to this certificate.

[11] This EU-TYPE EXAMINATION CERTIFICATE relates only to the design, examination and tests of the specified Product in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this Product. These are not covered by this certificate.

[12] The marking of the Product shall include the following:

II 2G Ex eb h mb ob IIC T6/T5 Gb

This certificate may only be reproduced in its entirety and without any change, schedule included.

Date 2020/10/08 - Translation issued on 2020/10/08

Prepared
Tiziano COLA

Verified
Alessandro FEDATO

Approved
Roberto PICCIN

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Schedule

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SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 07 ATEX 055 X /02

[15]

Description of the variations to the Product

With this new issue of the certificate, the following variations have been made to the product:

➤ Updating of the reference standards:

- EN IEC 60079-0 (2017)
- EN ISO 80079-36 (2016)
- EN ISO 80079-37 (2016)
- EN 60079-18 (2015)
- EN 60079-6 (2015) (*)
- EN 60079-7 (2015) (*)

(*) The requirements of these standards have not been thoroughly fulfilled but have been combined to have a protection level suitable for category 2G (EPL Gb).

➤ According to the updated standards the marking has been changed and the partial protection principles “eb” and “ob” have been placed in the marking string:

 II 2G Ex eb h mb ob IIC T6 Gb *(with thermal protection set at 70°C)*

or

 II 2G Ex eb h mb ob IIC T5 Gb *(with thermal protection set at 80/85°C)*

- For non-electrical protection the protection principle “k” (liquid immersion) instead of “c” (constructional safety);
- O-ring gaskets, which guarantee the seal between the cylindrical parts and the separation septum motor-cover and between pump body and motor cylinder, can be made in FKM compound as well;
- It has been added the possibility of installing the new cable TPX to supply the electro-pumps;
- Product marking is made through laser carving of the motor cylinder avoiding the use of plates;

Description of Product

Submersible electric pumps for drainage, series “Derby EX” and “ID Derby EX”, are single-impeller and vertical axis electric pumps, usable in ambient with presence of potentially explosive atmospheres, due to gas, vapours or mists, for the following purposes:

- emptying sumps,
- draining flooded areas,
- raising water from wells, pools and basins,
- industrial waterworks,
- draining sewage and cesspool systems,
- pumping hydrocarbons (only series “ID Derby EX”)

The electric pumps in subject are composed by an upper cover containing the electrical connections (protection “mb”), a central cylindrical part holding the electric, oil-immersed, motor (special protection by combining partial “eb” and “ob” protections) and the lower hydraulic part (non-electrical protection by liquid immersion “k”).

The mechanical seal, placed in the lower part of the electric pumps, between the motor enclosure, filled in with oil, and the underlying hydraulic impeller, submerged in the fluid to pump, can be of two different types.

Both types are already furnished of an attestation of conformity to the directive issued by relevant manufacturer:

<i>manufacturer</i>	<i>model</i>	<i>marking</i>	<i>Conformity</i>
Meccanotecnica Umbra S.p.A.	DR1-S	II 2G Ex h IIC Gb X	Technical file MTU/ATEX/18/U communicated to NB 0080
	FP/SA		

The usage of three thermal switches with manual reset (one per phase, one out of three logic) guarantees the temperature class even in case of malfunctioning.

This certificate may only be reproduced in its entirety and without any change, schedule included.

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The windings of the two-poles electric motor can be made as single-phase or three-phases. In the case of a single-phase winding, the power must be supplied using a capacitance (excluded from the certificate) - having the characteristics shown on the marking plate - placed on surface, in safe area and connected by a skilled electrician.

The electric pumps, subject of this certificate, are identified by the following code (e.g. Derby EX 100):

Derby EX pp (Standard series)

ID Derby EX pp (New series, models suitable for pumping hydrocarbons)

pp identifies the power of the pump:

50	0.37 kW (0.50 hp)
75	0.55 kW (0.75 hp)
100	0.75 kW (1.00 hp)
150	1.10 kW (1.50 hp)
200	1.50 kW (2.00 hp)

Electrical characteristics

Single-phase motor (with the starting capacitance to be installed, excluded from the certificate):

Rated power supply voltage	230 Vac
Maximum current	12.5 A

Three-phases motor:

Rated power supply voltage	400 Vca (colleg. \wedge) 230 Vca (colleg. Δ)
Maximum current	3.8 A
Rated frequency	50 Hz
Insulation class	F
Duty type	S1 (continuous at constant load) S4 (20 cycles per hour)
Rated speed under load	2850 turns per minute
Maximum density of the pumped fluid	1200 kg/m ³
Temperature of the pumped fluid	-20°C ÷ +40°C (above the freezing point)
Maximum depth for the use	15 m

Temperature class: T6 (with intervention temperature of the protections at 75°C + 5°K)
T5 (with intervention temperature of the protections at 80°C + 5°K or at 85°C + 5°K)

Marking: **II 2G Ex eb h mb ob IIC T6 Gb** or
II 2G Ex eb h mb ob IIC T5 Gb

Ambient temperature: -20°C < T_{amb} < +40°C

Warning labels

“DO NOT OPEN WHEN ENERGIZED”

“CAUTION - AUTOMATIC THERMAL PROTECTED MOTOR”

Electrical connection

Electric pumps are furnished with the supply cable, having the length required by the user, permanently connected to the pump. The connection of the free edge of the cable to the power supply shall be carried out by skilled person in safe zone or applying a suitable protection according to in force regulations.

For pumps with single-phase motor, it shall be installed, in safe zone, or with suitable protection, a condenser (excluded from the certificate) having the characteristics stated on the plate.

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Schedule

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[16] **Report n. EX-C0014098**

Routine tests

The manufacturer shall carry out the routine tests requested by clause 7.1 of the standard EN 60079-7, by clause 9.1 and 9.2 of the standard EN 60079-18 and by clause 6.2.1a (at 1.5 times the maximum service pressure 225 kPa = 2.25 barg) and 6.2.1b of EN 60079-6.

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Special conditions for safe use (X)

- The permanently connected supplying cable shall be properly protected against the risk of mechanical damage. The connection of its terminals, at the free edge, shall be made in safe zone or adopting one of the protections foreseen by the standard EN 60079-0;
- The electric pump shall remain completely submerged when operating;
- A flow-switch shall be installed in safe area or with a suitable protection (standard EN IEC 60079-0); it shall disconnect the motor in case of a reduction of the flow rate below 5 l/min;
- Electric pumps shall be protected with a suitable differential magneto-thermic circuit-breaker which shall cut the supply also in case the current, of a single-phase, drops to zero (e.g. intervention of a single thermostat);
- Pumps shall operate in the standing position or slightly leaning, 5 degrees at the most;
- In case of intervention of the thermal protection, unless the external reason which caused the overheating is well known, the pump shall be sent to the manufacturer or its authorized centre for oil level and quality check;
- In case of repeated interventions of the thermal protection, the equipment is to be considered not suitable for the kind of usage;
- Pumps cannot be used in case signs of oil leakage are noticed outside the pump;
- Before using the pump, verify the compatibility of the fluid with the materials of the pump.

[18]

Essential Health and Safety Requirements

EHSR are assured by compliance with safety conditions, by risk analysis carried out by the manufacturer and by conformity to the following standards:

- | | |
|-----------------------------|---|
| EN IEC 60079-0: 2017 | Explosive atmospheres - Part 0: Equipment – general requirements |
| EN 60079-18: 2015 | Explosive atmospheres - Part 18: Equipment protection by encapsulation “m” |
| EN ISO 80079-36:2016 | Explosive atmospheres - Part 36: Non-electrical equipment for explosive atmospheres - Basic method and requirements |
| EN ISO 80079-37:2016 | Explosive atmospheres - Part 37: Non-electrical equipment for explosive atmospheres - Non-electrical type of protection constructional safety “c”, control of ignition sources “b”, liquid immersion “k”. |

The requirements of the following standards have been partially fulfilled:

- | | |
|-------------------------|--|
| EN 60079-6: 2015 | Explosive atmospheres - Part 6: Equipment protection by liquid immersion “o” |
| EN 60079-7: 2015 | Explosive atmospheres - Part 7: Equipment protection by increased safety “e” |

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[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 07 ATEX 055 X /02**

[19] **Descriptive documents** (prot. EX-C0014097)

- * doc. n. 2006/01-03_00-02-EX DCH rev. 2 - Application for UE type examination (5 pages) dated 2019/10/31
- * doc. n. 2006/01-03_00-02-EX RESS rev. 2 - Assessment of EHSR (16 pages) dated 2019/10/31
- * doc. n. 2006/01-03_00-02-EX AR II rev. 2 - Risk analysis (16 pages) dated 2019/10/31
- * doc. n. 2006/01-03_00-02-EX NT rev. 2 - Tech. note – constructive characteristics (13 pages) dated 2019/10/31
- doc. n. 2006/01-03_01-00-EX NT rev. 0 - Tech. note – performance characteristics (4 pages) dated 2007/10/15
- * doc. n. 2006/01-03_00-04-EX IU rev. 4 - Instructions for use – “Derby EX” (9 pages) dated 2019/10/31
- * doc. n. 2006/01-03_01-04-EX IU rev. 4 - Instructions for use – “ID Derby EX” (9 pages) dated 2019/10/31
- * doc. n. 2006/01-03_01-02-EX DWG rev. 2 - Overall drawing “Derby EX” (2 pages) dated 2019/10/31
- * doc. n. 2006/01-03_02-01-EX DWG rev. 2 - Mechanical parts “Derby EX” (2 pages) dated 2019/10/31
- doc. n. 2006/01-03_03-00-EX DWG rev. 0 - Electrical connections “Derby EX” dated 2007/10/15
- * Datasheet of mechanical seals, new FKM O-rings, new TPX cable (13 pages)

*Note: an * is included before the title of documents that are new or revised annexed to this supplement.*

One copy of all documents is kept in CESI files.

Certificate history

Issue N.	Issue Date	Summary description of variation
02	Current	Standards updating, application of the non-electrical protection principle "k", construction changes and the materials used
01	2014/07/28	Standards updating and addition of series “ID Derby EX” for hydrocarbons
00	2007/11/05	First issue of the certificate