



1 **EC TYPE-EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: **Sira 01ATEX3022** Issue: **10**

4 Equipment: **Traction Batteries Up To 68.8 kWh**

5 Applicant: **Energys S.A.R.L.**

6 Address: **ZI Est
Rue Alexander Fleming
62033 Arras
France**

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 60079-0:2006 EN 60079-7:2007 EN 61241-0:2006 EN 61241-1:2004

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

11 This EC type-examination certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:



II 2 G
II 2 D
Ex e II T6
Ex tD A21 IP65 T80°C



I M2
Ex e I

Project Number 23702
C. Index 08

D R Stubbings BA MIET
Certification Manager

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SCHEDULE

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13 DESCRIPTION OF EQUIPMENT

The range of Traction Batteries comprise fabricated mild steel containers in which a range of increased safety, lead-acid cells are arranged. The batteries are manufactured with a power up to 68.8 kWh and a nominal voltage up to 400 V.

The containers utilise louvered and baffled ventilation slots to prevent the evolution of explosive concentrations of hydrogen and oxygen within the container's internal free volume. A large number of different configurations and shapes may be manufactured, within the limits described on the manufacturer's specification drawings.

The type designation code is made up of the following:

- No of cells and battery type reference
- No of terminals (single or double post)
- Number of positive plates
- Cell type
- Capacity per positive plate

The minimum ventilation ratios of the battery containers are:

- Battery container top vents = 850 mm²/kWh
- Battery container side vents = 1320 mm²/kWh

The battery container is fitted with a suitably certified cable gland to protect the cable that is fitted between the battery and attached apparatus. Alternatively, a rubber grommet and a suitably certified intermediate terminal box may be fitted.

There is also the option to fit a suitably certified increased safety enclosure with a flameproof socket to the side of the battery enclosure, located where the connecting cables exit the enclosure. The particular assembly that is fitted is not specifically identified as part of the battery certification.

Variation 1 (dated 15 October 2002) - This variation introduced the following changes:

- i. The addition of alternative insulating coatings for the internal surfaces of the battery enclosure.
- ii. The option to fit a suitably certified increased safety enclosure with a flameproof socket to the side of the battery enclosure, located where the connecting cables exit the enclosure. The particular assembly that is fitted is not specifically identified as part of the battery certification.
- iii. The design of the cells utilised in the construction of the battery was modified.

Variation 2 (dated 3 April 2003) - This variation introduced the following changes:

- i. The introduction of Apparatus Group I, Category M2 and EEx e I marking.
- ii. The use of Evolution Type B and Evolution Type D cells was allowed.
- iii. The use of battery crates with 9 cell and 20 cell layouts was allowed.



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Variation 1 (dated 22 July 2005) - This variation introduced the following change:

- i. The use of an alternative label.

Variation 2 (dated 14 October 2005) - This variation introduced the following changes:

- i. The manufacturer's name was changed from Hawker France S.A. to Hawker S.A.R.L.
- ii. The introduction of minor modifications to the certified drawings, none of which affect aspects of the product that are relevant to explosion safety.

Variation 3 (dated 6 August 2007) - This variation introduced the following changes:

- i. Following appropriate re-assessment to demonstrate compliance with the requirements of the EN 60079 series of standards, the documents originally listed in section 9, EN 50014:1997 (amendments A1 to A2), EN 50019:2000 and EN 50281-1-1:1998, were replaced by EN 60079-0:2006, EN 60079-7:2007, EN 61241-0:2006 and EN 61241-1:2004, the markings in section 12 were updated accordingly.
- ii. Minor modifications of the certified drawings were recognised, these are amendments are in-line with the new standards listed above and also correct typographical errors.
- iii. Battery arrangements up to 400 V were allowed to be used.
- iv. An additional warning label was introduced; this uses an alternative label material and fixing method.

Variation 4 (dated 26 September 2007) - This variation introduced the following change:

- i. The addition of two alternative materials for cell enclosures and inside battery enclosure.

Variation 5 (dated 26 September 2007) - This variation introduced the following change:

- i. The removal of Cell Layout from the Type Designation Code.

Variation 6 - This variation introduced the following changes:

- i. The recognition of minor drawing modifications; these amendments are administrative or involve changes to the design that do not affect the aspects of the product that are relevant to explosion safety.
- ii. To allow a change in the product description to allow the capacity to be specified in kWh.
- iii. Drawings SIRAATEX1, SIRAATEX4 P25127, P25128, P24807 and P24808 have been modified to include a wider range of cable cross sections.

Variation 7 - This variation introduced the following changes:

- i. The introduction of a new label drawing showing the brand name Oerlikon was recognised.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.



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14.2 Associated Sira Reports and Certificate History

Issue	Date	Report no.	Comment
0	1 November 2001	R53A7212B	The release of the prime certificate in the name of Hawker GmbH, Dieckstrasse 42, D-58089 Hagen, Germany.
1	15 October 2002	R53A9083A	The introduction of Variation 1.
2	3 April 2003	R53A9706B	The introduction of Variation 2.
3	6 July 2004	R53A11442A	The re-issue of the prime certificate in the name of Hawker France SA, ZI Est, Rue Alexander Fleming, 62033 Arras, France to introduce the changes described in report number R53A11442A and to incorporate variation 1 dated 15 October 2002 and variation 2 dated 3 April 2003.
4	22 July 2005	R51A13744A	The introduction of Variation 1.
5	14 October 2005	R51A13711A	The introduction of Variation 2.
6	6 August 2007	R51A16168A	This Issue covers the following changes: <ul style="list-style-type: none">All previously issued certification was rationalised into a single certificate, Issue 6, Issues 0 to 5 referenced above are only intended to reflect the history of the previous certification and have not been issued as documents in this format.The introduction of Variation 3.
7	26 September 2007	R51A17275A	The introduction of Variation 4.
8	14 February 2008	R52A17587A	To recognise the change of Applicant's name from Hawker S.A.R.L. To Enersys S.A.R.L. The introduction of Variation 5.
9	11 February 2010	R19846A/00	The introduction of Variation 6.
10	18 November 2010	R23702A/00	The introduction of Variation 7.

15 SPECIAL CONDITIONS FOR SAFE USE (denoted by X after the certificate number)

None

16 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in the reports listed in Section 14.2.

17 CONDITIONS OF CERTIFICATION

17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.

17.2 Holders of EC type-examination certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.

17.3 Each battery shall be subjected to a routine insulation test in accordance with EN 60079-7:2007 clause 6.6.2. The insulation resistance shall be at least 1 MΩ between the live parts and the battery container.

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Certificate Annexe

Certificate Number: Sira 01ATEX3022
Equipment: Traction Batteries Up To 68.8 kWh
Applicant: Enersys S.A.R.L.



Issue 0 to 2

The drawings associated with these Issues were replaced by those listed in Issue 3.

Issue 3

Number	Sheet	Rev.	Date	Description
SIRAATEX1	1 of 1	4	28 May 04	158 mm Type B Lead Acid Motive Power Cells
SIRAATEX4	1 of 1	4	28 May 04	198 mm Type D Lead Acid Motive Power Cells
P25127	1 of 1	5	28 May 04	158 mm Gelled Type B Lead Acid Motive Power Cells
P25128	1 of 1	5	28 May 04	198 mm Gelled Type D Lead Acid Motive Power Cells
P24807	1 of 1	5	28 May 04	Zone 1 Battery with 42 mm Louver Crate
P25326	1 of 4	2	28 May 04	'France' Manufactured Parts Labels
P25326	2 of 4	2	28 May 04	'Germany' Manufactured Parts Labels
P25326	3 of 4	2	28 May 04	'Poland' Manufactured Parts Labels
P25326	4 of 4	2	28 May 04	'Czech Republic' Manufactured Parts Labels

Issue 4

Number	Sheet	Rev.	Date	Description
P25473	1 of 1	1	13 Jul 05	Cells Labels

Issue 5

Number	Sheet	Rev.	Date	Description
SIRAATEX1	1 of 1	5	27 Jun 05	158 mm Type B Lead Acid Motive Power Cells
SIRAATEX4	1 of 1	5	27 Jun 05	198 mm Type D Lead Acid Motive Power Cells
P25127	1 of 1	6	27 Jun 05	158 mm Gelled Type B Lead Acid Motive Power Cells
P25128	1 of 1	6	27 Jun 05	198 mm Gelled Type D Lead Acid Motive Power Cells
P24807	1 of 1	6	27 Jun 05	Zone 1 Battery with 42 mm Louver Crate
P25326	1 of 4	3	27 Jun 05	'France' Manufactured Parts Labels
P25326	2 of 4	3	27 Jun 05	'Germany' Manufactured Parts Labels
P25326	3 of 4	3	27 Jun 05	'Poland' Manufactured Parts Labels
P25326	4 of 4	3	27 Jun 05	'Czech Republic' Manufactured Parts Labels

Issue 6

Number	Sheet	Rev.	Date (Sira stamp)	Description
SIRAATEX1	1 of 1	9	25 Jul 07	Acid Motive Power Cells Type B
SIRAATEX4	1 of 1	8	25 Jul 07	Acid Motive Power Cells Type D
P25127	1 of 1	9	25 Jul 07	Lead Acid Motive Power Cells Type B
P25128	1 of 1	9	25 Jul 07	Lead Acid Motive Power Cells Type D
P24807	1 of 1	9	25 Jul 07	Batteries Up To 860 Ah & 68.8 Kw/h
P25326	1 of 4	5	25 Jul 07	Cell/Battery Labels
P25326	2 of 4	5	25 Jul 07	Cell/Battery Labels
P25326	3 of 4	6	25 Jul 07	Cell/Battery Labels
P25326	4 of 4	5	25 Jul 07	Cell/Battery Labels
P25473	1 of 1	3	25 Jul 07	Cell/Battery Labels

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Certificate Annexe

Certificate Number: Sira 01ATEX3022
Equipment: Traction Batteries Up To 68.8 kWh
Applicant: Enersys S.A.R.L.



Issue 7

Number	Sheet	Rev.	Date (Sira stamp)	Description
SIRAATEX1	1 of 1	10	26 Sept 07	Acid Motive Power Cells Type B
SIRAATEX4	1 of 1	9	26 Sept 07	Acid Motive Power Cells Type D
P25127	1 of 1	9	26 Sept 07	Lead Acid Motive Power Cells Type B
P25128	1 of 1	10	26 Sept 07	Lead Acid Motive Power Cells Type D

Issue 8

Number	Sheet	Rev.	Date (Sira stamp)	Description
SIRAATEX1	1 of 1	13	14 Feb 08	Acid Motive Power Cells Type B
SIRAATEX4	1 of 1	12	14 Feb 08	Acid Motive Power Cells Type D
P25127	1 of 1	13	14 Feb 08	Lead Acid Motive Power Cells Type B
P25128	1 of 1	13	14 Feb 08	Lead Acid Motive Power Cells Type D
P24807	1 of 1	10	14 Feb 08	Batteries Up To 860 Ah & 68.8 Kw/h
P25473	1 of 1	4	14 Feb 08	Cell/Battery Labels

Issue 9

Number	Sheets	Rev.	Date (Sira stamp)	Description
SIRAATEX1	1 of 1	15	18 Jan 10	Acid Motive Power Cells Type B
SIRAATEX4	1 of 1	14	18 Jan 10	Acid Motive Power Cells Type D
P24807	1 of 1	11	18 Jan 10	Batteries Up To 68.8 Kw/h
P25127	1 of 1	14	18 Jan 10	Lead Acid Motive Power Cells Type B
P25128	1 of 1	14	18 Jan 10	Lead Acid Motive Power Cells Type D
P25326	1 of 4	7	18 Jan 10	'France' Manufactured Parts Labels
P25326	2 of 4	7	18 Jan 10	'Germany' Manufactured Parts Labels
P25326	3 of 4	8	18 Jan 10	'Poland' Manufactured Parts Labels
P25326	4 of 4	7	18 Jan 10	'Czech Republic' Manufactured Parts Labels
P25473	1 of 1	5	18 Jan 10	Battery Labels

Issue 10

Number	Sheets	Rev.	Date (Sira stamp)	Description
P26414	1 of 1	1	17 Nov 2010	Cell Labels

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