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|---|---|---|---|---|
| **Prüfbericht-Nr.:** *Test report no.*: | **CN23IK6Q 001** | **Auftrags-Nr.:** *Order no.*: | 170341552 10 | Seite 1 von 46 *Page 1 of 46* |
| **Kunden-Referenz-Nr.:** *Client reference no.*: | 2176866 | **Auftragsdatum:** *Order date:* | 2023-04-28 | |
| **Auftraggeber:** *Client*: | Zhejiang Leiya Electronics Co., Ltd.<br>No. 528, 4th Avenue, Binhai, Economic and Technological Development Zone, Wenzhou, Zhejiang, P.R. China | | | |
| **Prüfgegenstand:** *Test item*: | Gasoline Generator Set | | | |
| **Bezeichnung / Typ-Nr.:** *Identification / Type no.*: | EYG3900G, EYG3900GE, EYG6500G, EYG6500GE, EYG8000G, EYG8000GE, EYG9000G, EYG9000GE | | | |
| **Auftrags-Inhalt:** *Order content*: | Type test | | | |
| **Prüfgrundlage:** *Test specification*: | EN ISO 8528-13: 2016<br><br>*Reciprocating internal combustion engine driven alternating current generating sets - Part 13: Safety* | | | |

| | |
|---|---|
| **Wareneingangsdatum:** *Date of sample receipt*: | 2023-05-04 |
| **Prüfmuster-Nr.:** *Test sample no:* | EYG3900G-23001<br>EYG90000GE-23001 |
| **Prüfzeitraum:** *Testing period*: | 2023-05-04 - 2023-05-05 |
| **Ort der Prüfung:** *Place of testing*: | As client |
| **Prüflaboratorium:** *Testing laboratory:* | TÜV Rheinland (Guangdong) Ltd. |
| **Prüfergebnis*:** *Test result**: | Pass |

| | | | |
|---|---|---|---|
| **geprüft von:** *tested by:* | X Larry Chen | **genehmigt von:** *authorized by*: | X Billy Shen |
| **Datum:** *Date:* 2023-05-29 | | **Ausstellungsdatum:** *Issue date:* 2023-05-29 | |
| **Stellung** / Position: | Larry Chen / Expert | **Stellung** / Position: | Billy Shen / Expert |

**Sonstiges /**
*Other*:

| | |
|---|---|
| **Zustand des Prüfgegenstandes bei Anlieferung:** *Condition of the test item at delivery*: | Prüfmuster vollständig und unbeschädigt *Test item complete and undamaged* |

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|---|---|---|---|---|
| * Legende: | P(ass) = entspricht o.g. Prüfgrundlage(n) | F(ail) = entspricht nicht o.g. Prüfgrundlage(n) | N/A = nicht anwendbar | N/T = nicht getestet |
| * *Legend:* | *P(ass) = passed a.m. test specification(s)* | *F(ail) = failed a.m. test specification(s)* | *N/A = not applicable* | *N/T = not tested* |

**Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.**
*This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.*
V05

## Anmerkungen
*Remarks*

| | |
|---|---|
| **1** | Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben.<br>Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.<br><br>*The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.* |
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| **3** | Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben.<br>Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.<br><br>*Test clauses with remark of * are subcontracted to qualified subcontractors and descripted under the respective test clause in the report.*<br>*Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.* |
| **4** | Die Entscheidungsregel für Konformitätserklärungen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird.<br><br>*The decision rule for statements of conformity in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report.* |

## Produktbeschreibung
*Product description*

| | | |
|---|---|---|
| 1 | **Produktdetails**<br>*Product details* | The presented machines are defined as **Low-power generating set** which driven by gasoline engine. The output voltage is controlled by Automatic Voltage Controller (AVR). |
| 2 | **Maße / Gewicht**<br>*Dimensions / Weight* | --- |
| 3 | **Bedienelemente**<br>*Operating elements* | Refer to specifications on page 4 |
| 4 | **Ausstattung / Zubehör**<br>*Equipment / Accessories* | --- |
| 5 | **Verwendete Materialien**<br>*Used materials* | Gasoline |
| 6 | **Sonstiges**<br>*Other* | --- |
| 7 | **Prüfmusterbereitstellung**<br>*Test sample obtaining* | ☐ Sending by customer ☐ Sampling by TÜV Rheinland Group<br>☒ others: provided by factory site |

| EYG3900G | EYG9000GE |
|---|---|
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| --- | --- |
| --- | --- |

## Produktbeschreibung
*Product description*

***General information:***

**EYG3900G** and **EYG3900GE** have the similar construction except the starting system.

- EYG3900G is triggered by recoil starting system only.
- EYG3900G is triggered by both recoil starting system and DC12V electrical starting system.

**EYG6500G, EYG6500GE, EYG8000G, EYG8000GE, EYG9000G** and **EYG9000GE** have the similar construction except the starting system and output power.

- EYG6500G, EYG8000G and EYG9000G are triggered by recoil starting system only.
- EYG6500GE, EYG8000GE and EYG9000GE are triggered by both recoil starting system and DC12V electrical starting system.

One of **EYG3900G** (serial number: EYG3900G-23001) and one of **EYG9000GE** (serial number: EYG9000GE-23001) were selected as representative testing samples. Other information refers to the specification table following.

***Specifications:***

| Model | Power COP | Power MAX | Power Factor | Rated current | AC output | DC output |
|---|---|---|---|---|---|---|
| EYG3900G | 3.1 kW | 3.15 kW S2 5 min | 1.0 | 13.5 A | 230V/50Hz | N/A |
| EYG3900GE | 3.1 kW | 3.15 kW S2 5 min | 1.0 | 13.5 A | 230V/50Hz | N/A |
| EYG6500G | 5.0 kW | 5.5 kW S2 5 min | 1.0 | 21.7 A | 230V/50Hz | 12V/8.3A |
| EYG6500GE | 5.0 kW | 5.5 kW S2 5 min | 1.0 | 21.7 A | 230V/50Hz | 12V/8.3A |
| EYG8000G | 6.0 kW | 6.5 kW S2 5 min | 1.0 | 26 A | 230V/50Hz | 12V/8.3A |
| EYG8000GE | 6.0 kW | 6.5 kW S2 5 min | 1.0 | 26 A | 230V/50Hz | 12V/8.3A |
| EYG9000G | 7.0 kW | 7.5 kW S2 5 min | 1.0 | 30.4 A | 230V/50Hz | 12V/8.3A |
| EYG9000GE | 7.0 kW | 7.5 kW S2 5 min | 1.0 | 30.4 A | 230V/50Hz | 12V/8.3A |

***Rating label:***

Refer to page 38.

| Absatz *Clause* | Anforderungen - Prüfungen / *Requirements - Tests* | Messergebnisse – Bemerkungen/ *Measuring results - Remarks* | Ergebnis *Result* |
|---|---|---|---|
| **6** | **Safety requirements and tests** | | **P** |
| **6.1** | **General** | | **P** |
| | Machinery shall comply with the safety requirements and/or protective measures of this clause. In addition, the machine shall be designed according to the principles of ISO 12100 for relevant but not significant hazards, which are not dealt with by this part of ISO 8528. | | **P** |
| **6.2** | **Starting system** | | **P** |
| **6.2.1** | **Requirements** | | **P** |
| | Starting systems can be triggered manually or automatically. | | **P** |
| | Electrical starting systems normally operated at voltages of 24V or below. Electrical starting systems above 24V are not dealt with in this part of ISO 8528 and the installer of the engine shall ensure safe operation after connecting the engine to the driven machinery. | 12VDC for electrical starting system | **P** |
| | For engines with compressed air starting, the starting pneumatic system shall comply with the installation requirements and with the operation and safety information specified in the manuals provided by the starting system components suppliers. | Spark ignition engine | **N/A** |
| | Crank handle starting systems shall meet the requirements specified in ISO 11102-1 and ISO 11102-2. In additional, the following requirements apply:<br>- Starting handles shall have the sufficient clearance from the mounting surface to ensure safe turning;<br>- Diesel engines with a manual starter shall have a decompression facility which shall not be required to be hand-held during cranking. | Recoil starting device | **N/A** |
| | The only permissible hand starting systems are crank handle (as defined above) and recoil starting devices as described in ISO 14314. The marking required in ISO 14314: 2004, 7.3 shall not apply. | Recoil starting device is provided and checked according with ISO 14314. | **P** |
| **6.2.2** | **Verification** | | **P** |
| | Compliance with the requirements shall be verified by inspection and testing of the starting systems. | Inspected and OK | **P** |
| **6.3** | **Stopping** | | **P** |
| **6.3.1** | **Requirements** | | **P** |
| **6.3.1.1** | **Normal stopping** | | **P** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | All generating sets shall have a normal stopping device which can be manually or automatically actuated. Stopping controls shall remain in the stop position when operated. This shall operate by a device ensuring the cutting off of the fuel or the ignition (for spark ignition engines) supply. This device may include an air supply cut-off. | Manual operated stopping switch is provided to cut off the ignition wiring. When the switch operated, the stopping control remains in the stop position.<br>Additional fuel switch is provided to cut off the fuel supply. | **P** |
| **6.3.1. 2** | **Stopping in case of failure** | | **N/A** |
| | Generating sets except low power generating sets shall be provided with an automatically actuated stopping device in case of failure.<br>This device shall monitor one or more signals of the generating set and if these signals are out of the allowable range it triggers the automatic stop.<br>The main signals that might be used to actuate automatic stopping may include, but not be limited, the following:<br>a) for the RIC engine:<br>1) over speed;<br>2) low lubricating oil pressure;<br>3) high coolant temperature;<br>4) low coolant level;<br>b) for the generator:<br>1) excessive overvoltage;<br>2) Overload.<br>This signals or other measures used to actuate automatic stopping shall be specified depending on the application. | Low-power generating sets | **N/A** |
| **6.3.2** | **Verification** | | **P** |
| | Normal stopping shall be verified by inspection and testing of the stopping device in manual and in automatic modes (if provided in the application). | Manual operation | **P** |
| | Automatic stopping in case of failure shall be verified by testing the action of typical failure modes in operating conditions (an appropriate method shall be used to create typical failure conditions, e.g. manual triggering, short-circuiting of contacts). | Low-power generating sets | **N/A** |
| **6.4** | **Emergency stopping** | | **N/A** |
| **6.4.1** | **Requirement** | | **N/A** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | Emergency stopping devices are required for remote controlled generating sets and generating sets with an enclosure or container accessible by persons. In accordance with the risk assessment in ISO 12100:2010, 6.3.5.2, an emergency stopping device is not required for low power generating sets, as it shall not lessen the risk by reducing the stopping time. | Low-power generating sets | **N/A** |
| | Emergency stopping devices shall be actuated manually. As for normal stopping, emergency stopping shall operate by a device ensuring the cutting off of the fuel supply or ignition (for spark ignition engines). This device may include an air supply cut-off. | | **N/A** |
| | Emergency stopping devices shall also meet the requirements of EN ISO 13850, category 0, and the reset shall not initiate a restart or any hazardous conditions. | | **N/A** |
| | Manually actuated emergency stopping devices shall be located inside and outside the enclosure or container in which a generating set is located and which is accessible for personnel to carry out maintenance or control operations when generating sets are in operation. | | **N/A** |
| **6.4.2** | **Verification** | | **N/A** |
| | Emergency stopping devices shall be verified by inspection and testing in operating conditions. | Low-power generating sets | **N/A** |
| **6.5** | **Control devices** | | **P** |
| **6.5.1** | **Design, safety and mechanical strength** | | **P** |
| **6.5.1.1** | **Requirement** | | **P** |
| | Control devices for the RIC engine of the generating set shall meet the following requirements: | | **P** |
| | - handle controls shall be designed to with stand 1,2x the maximum actuating forces given in Table 1;<br>**Table 1 — Clearance between controls**<br>Operation by / Spacing (mm) / Maximum actuating (N)<br>Finger tip: 10 / 10<br>Finger grasp<br>— toggles: 20 / 50<br>— knobs: 20 / 50<br>Hand<br>— upward: 50 / 400<br>— fore-aft: 50 / 300 | Recoil starter is tested and OK. | **P** |
| | - for handles, knobs, grips, levers and similar devices, requirements and tests shall be in accordance with IEC 60335-1:2013, 22.12 | Controls, knobs, grips, levers are tested and OK. | **P** |
| | - controls shall act positively and smoothly and without delay or unexpected action and be in accordance with ISO 2261; | Inspected and OK | **P** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | - the surface temperature of the controls that shall be manually actuated while the engine is running shall be within the following limits in accordance with ISO 13731-1 for a contact time of 10 s:<br>- 55 °C for metallic surfaces, and<br>- 70 °C for non-metallic surfaces; | Surface temperature is tested and OK. | **P** |
| | - sharp edges or corners on, or adjacent to manual controls shall be removed. Edges shall have a chamfer of at least 0.5 mm. | Inspected and OK | **P** |
| **6.5.1.2** | **Verification** | | **P** |
| | Control devices of the RIC engine shall be verified by inspection and testing. | Inspected and OK | **P** |
| | Control devices of the generating sets shall be verified in accordance with IEC 60204-1:2009, 10.1 and 10.2. | Refer to Annex B | **P** |
| | For surface temperature measurement of the control devices (RIC engines and generating sets), the following method shall be conducted:<br>a) the generating set shall be operated at its rated power until the surface temperatures stabilize;<br>b) the test shall be conducted in well-ventilated place not directly exposed to sunshine;<br>c) if the test is conducted at an ambient temperature outside of the nominal (20 ± 3) °C the reported temperatures shall be corrected by the formula 1:<br>Corrected temperature (°C) = reported temperature (°C) - ambient temperature (°C) + 20 (°C) | | **P** |
| **6.5.2** | **Identification** | | **P** |
| **6.5.2.1** | **Requirements** | | **P** |
| | The controls devices of the RIC engines shall be identified to the function they perform or their function shall be explained in the operating manual. They shall be identified according to IEC 61310-2. Colour coding shall be according IEC 60073. | Controls markings of the RIC engine according with IEC 61310-2. | **P** |
| | The marking on the engine controls shall be legible throughout the engine life. | Markings are legible. | **P** |
| | Identification should preferable be by symbols according to ISO 7000 or ISO 8999 or, if there are not suitable symbols, by words placed on the control adjacent to it. Design, location and marking principles shall be in according with IEC 61310-1. | Controls markings of the RIC engine according with ISO 7000. | **P** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | Emergency shut-off control handles or buttons shall be prominently located and shaped as well as being coloured red, in order to be identified among the other controls. | No emergency stopping device | **N/A** |
| | The control devices on electrical equipment shall comply with the requirements of IEC 60204-1:2009, 10.1 and 10.2 with the exception as given in Annex B.1. | Refer to Annex B | **P** |
| **6.5.2.2** | **Verification** | | **P** |
| | Compliance with the requirements shall be verified by inspection. | Inspected and OK | **P** |
| **6.5.3** | **Accessibility** | | **P** |
| **6.5.3.1** | **Requirements** | | **P** |
| | Controls should preferably be grouped. | | **P** |
| | Controls should be located within reach of the operator. | | **P** |
| | Access be provided according to ISO 15534-2. The spacing between controls shall be sufficient to allow operation without unintentional actuation of adjacent controls. For the minimum clearances between controls recommended for the given maximum actuating force, see Table 1. | Operation does not disturb the adjacent controls. | **P** |
| **6.5.3.2** | **Verification** | | **P** |
| | Compliance with the requirements shall be verified by inspection and measurement. | Inspected and OK | **P** |
| **6.6** | **Monitoring devices** | | **P** |
| **6.6.1** | **Requirements** | | **P** |
| **6.6.1.1** | **Instrument identification** | | **P** |
| | Monitoring instruments shall be identified on or adjacent to them, preferably by symbol according to ISO 8999 or descriptive wording for the system being monitored. | | **P** |
| **6.6.1.2** | **Instrument visibility** | | **P** |
| | Monitoring instruments shall be visible to the operator. | | **P** |
| | They shall be illuminated for the night time or indoor operation so that are legible from the operator's position where the application requires it. | The generating set cannot be operated for the night time nor indoor. | **N/A** |
| **6.6.1.3** | **Instrument colour code** | | **P** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | Monitoring instruments and monitoring systems shall preferably be colour coded according to IEC 60073. Red is recommended for malfunction or unsafe situation; green for a satisfactory situation or to indicate a system is operation. | | **P** |
| | The instruments for the monitoring of the electrical equipment shall comply with IEC 60204-1:2009, 10.3. | Refer to Annex B | **P** |
| **6.6.2** | **Verification** | | **P** |
| | Compliance with the requirements shall be verified by inspection. | Inspected and OK | **P** |
| **6.7** | **Warning devices** | | **P** |
| **6.7.1** | **Requirements** | | **P** |
| | Warning devices, signs, markings and colours shall meet the requirements of ISO 11429. | Warnings can be easily visible to the operator. | **P** |
| **6.7.2** | **Verification** | | **P** |
| | Compliance with the requirements shall be verified by inspection. | Inspected and OK | **P** |
| **6.8** | **Guarding** | | **P** |
| **6.8.1** | **General** | | **P** |
| **6.8.1.1** | **Requirements** | | **P** |
| | The following clauses give the requirements for the common hazards related to guarding and any generating set or installation shall comply with these requirements. | | **P** |
| | Guards shall be designed in accordance with ISO 14120. | | **P** |
| | Fixing systems of fixed guards shall remain attached to the guards or to the generating set when the guards are removed. This requirement is limited to fixed guards that need to be removed during normal maintenance operations as described in instructions of use. | No such fixing system | **N/A** |
| | For fixed installed generating sets the need of guarding shall be agreed between generating set manufacturer and installer considering that the persons shall be protected during operating and routine servicing.<br><br>Because it is not possible to envisage the layout of fixed installation, the overall requirements for this situation are not dealt with in this part of ISO 8528. Therefore, for fixed installations, the need for additional guarding to protect persons during operation and routine servicing shall be established after discussion between the generating set manufacturer, user and installer. | Not fixed installed generating set | **N/A** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| **6.8.1.2** | **Verification** | | **P** |
| | Compliance with the requirements shall be verified by inspection. | Inspected and OK | **P** |
| **6.8.2** | **Guarding against mechanical hazards** | | **P** |
| **6.8.2.1** | **Requirements** | | **P** |
| | Moving parts of generating sets e.g. fan, belt, chains, etc. shall be so arranged or enclosed as to prevent direct involuntary access during normal use i.e. during maintenance, monitoring or control operations described in the manual of use. | All moving parts are enclosed. | **P** |
| | If the guard is constructed of open-mesh material the openings shall be sized as follows: | | **P** |
| | a) Guards that are less than 100mm from a hazard shall meet the requirements of IEC 60034-5: 2006, Clause 8, with the 12mm test probe. | The test probe cannot touch the moving part from the generator cover. | **P** |
| | b) Guards that are 100mm or more from a hazard shall meet the opening requirements of ISO 13857:2008; Table 4. | No such opening | **N/A** |
| **6.8.2.2** | **Verification** | | **P** |
| | Compliance with the requirements shall be verified by measurements and if necessary by using a 12mm test probe. | Inspected and OK | **P** |
| **6.8.3** | **Guarding against hot surfaces** | | **P** |
| **6.8.3.1** | **General** | | **P** |
| | The necessity to guard hot surfaces depends on its surface temperature, its location and if a person is likely to touch it. | | **P** |
| | The temperature of the guards shall not exceed the threshold temperature. If this cannot be avoided, then display a warning. | Warning label is provided on the hot surface adjacent. | **P** |
| **6.8.3.2** | **Requirements for generating sets except low power generating sets** | Low-power generating sets | **N/A** |
| | A risk assessment shall be carried out by the generating sets manufacturer to determine the surfaces with a burn hazard and identify appropriate protective measures in order to prevent accidental contact in normal conditions of use, i.e. during control, monitoring and maintenance operations described in the manual of use. | | **N/A** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | At least the following areas shall be considered.<br><br>a) The surfaces which can be reached when probed by the cones in accordance with Figure 1 and Figure 2 shall not have a temperature higher than the following:<br><br>1) 80 °C for metallic surfaces;<br><br>2) 94 °C for non metallic surfaces. | | **N/A** |
| | b) The surfaces, except exhaust engine parts, which do not meet the requirements set in a) shall be guarded to meet a). When the guard does not permit the reduction of the temperature below the temperature limits, a warning marking shall be fixed on or near this guard to warn the generating sets user of the presence of a burn danger. | | **N/A** |
| | c) Any engine exhaust surface more than 10 cm2 which can be reached when probed by the cones, shall be equipped with a guard to limit the most severe burn risks by direct contact. The guard shall meet the requirements specified in a). When the guard does not permit the reduction of the temperature below the limits threshold, a warning marking shall be fixed on or near this guard to warn the generating sets user of the presence of a burn danger. | | **N/A** |
| | d) An enclosure with access doors for maintenance or control operations shall not be considered as protection against contact with an engine exhaust. | | **N/A** |
| **6.8.3.3** | **Verification for generating sets except low power generating sets** | Low-power generating sets | **N/A** |
| | a) The accessibility of the identified hot surfaces during control and monitoring operations shall be verified by applying the test cones in accordance with Figure 1 and Figure 2:<br><br>1) when the distance between the identified hot area and the nearest control is in excess of 100 mm, cone A as shown in Figure 1 shall be used;<br><br>2) for distances less than 100 mm between the identified hot area and the nearest control, cone B as shown in Figure 2 shall be used; | | **N/A** |
| | 3) for cone A with the axis of the cone anywhere 0° and 180° to the horizontal and with the point of the cone in a downward to horizontal direction, move the cone towards the hot surface. The cone shall not be moved in an upwards direction. When moving the cone, determine if contact is made with the hot surface area(s) with the cone tip or conical surface of the cone;<br><br>4) Cone B shall be moved in any direction. | | **N/A** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | b) For maintenance operations, the hot surfaces to be considered are those more than 10 cm2 located at less than 300 mm of a maintenance or control point and/or of access path for operators. | | **N/A** |
| | c) The generating set shall be operated at its rated power until the surface temperatures stabilize. | | **N/A** |
| | d) The test shall be conducted in a well-ventilated location not directly exposed to sunshine. | | **N/A** |
| | e) If the test is conducted at an ambient temperature outside of the nominal (20 ± 3) °C the reported temperatures shall be corrected by Formula (1):<br><br>Corrected temperature (°C) = reported temperature (°C) - ambient temperature (°C) + 20°C | | **N/A** |
| **6.8.3.4** | **Requirements for low power generating sets** | | **P** |
| | a) The accessible surfaces in the close proximity of controls shall not have a temperature higher than the following:<br><br>1) 80 °C for metallic surfaces;<br><br>2) 94 °C for non-metallic surfaces. | The temperature of the control panel does not exceed the limit. | **P** |
| | b) The carrying handles of generating sets and the accessible surfaces in their close proximity shall not have a temperature higher than the following:<br><br>1) 50 °C for metallic surfaces;<br><br>2) 70 °C for non-metallic surfaces. | The temperature of the handle does not exceed the limit. | **P** |
| | c) The engine exhaust, with potential burn hazards during the operating, but also during cooling period following a generating sets stopping, shall be equipped with a guard to limit the most severe burn risks by accidental contact. The dimension of guard clearance shall ensure that such exhaust surface cannot be reached when being probed by test cones in accordance with Figure 1 and Figure 2. Any exhaust surface less than 10 $cm^2$ does not need to be equipped with protection. | The engine exhaust components are guarded. | **P** |
| | Accessible engine exhaust components more than 10 $cm^2$ and their guards shall not have surface temperatures higher than 94 °C for non-metallic surfaces materials or 80 °C for metallic surfaces. When a guard does not permit the reduction of the temperature below the limits threshold, a warning marking shall be fixed, in addition, on or near this guard to warn the generating sets user of the presence of a burn danger. | Temperature of exhaust components exceed 80 °C, the exhaust components are located inside the frame contour, a hot warning marking is fixed near the guard. | **P** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | d) Accessible hot surface parts more than 10 cm2 except for these services described in a), b) or c) with a temperature higher than 94°C for non-metallic surfaces or 80 °C for metallic surfaces, shall be located inside the frame contour and a warning marking shall be fixed, in addition, on or near the parts to warn the low power generating sets user of the presence of a burn danger. | Engine part is located inside the frame contour. | **P** |
| | e) An enclosure with access doors for maintenance or control operations shall not be considered as protection against contact with an engine exhaust. | No such access door | **N/A** |
| **6.8.3.5** | **Verification for low power generating sets** | | **P** |
| | a) The accessibility of the identified hot surfaces during control and monitoring operations shall be verified by applying the test cones in accordance with Figure 1 and Figure 2:<br><br>1) when the distance between the identified hot area and the nearest control is in excess of 100 mm, cone A as shown in Figure 1 shall be used;<br><br>2) for distances less than 100 mm between the identified hot area and the nearest control, cone B as shown in Figure 2 shall be used;<br><br>3) for cone A with the axis of the cone anywhere 0° and 180° to the horizontal and with the point of the cone in a downward to horizontal direction, move the cone towards the hot surface. The cone shall not be moved in an upwards direction. When moving the cone, determine if contact is made with the hot surface area(s) with the cone tip or conical surface of the cone;<br><br>4) Cone B shall be moved in any direction; | Tested and OK | **P** |
| | b) When the accessible hot surfaces are less than 10 $cm^2$ they shall be verified in accordance with 6.8.3.1.<br><br>1) The surfaces temperatures shall be verified by measurement,<br><br>2) The generating set shall be operated at its rated power until the surface temperatures stabilize,<br><br>3) The test shall be conducted in a well-ventilated location not directly exposed to sunshine,<br><br>4) If the test is conducted at an ambient temperature outside of the nominal (20 ± 3) °C the reported temperatures shall be corrected by Formula (1):<br><br>Corrected temperature (°C) = reported temperature (°C) - ambient temperature (°C) + 20 °C | Tested and OK | **P** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | A guard shall be provided to prevent accidental contact with any engine exhaust component during normal operation; any hot surface smaller than 10 $cm^2$ does not require guarding. | The engine exhaust components are guarded. | **P** |
| | The determination of area for interrupted surfaces shall be made as follows.<br><br>If a marked surface (with area A1) consists of multiple separate surfaces of which the sum of the areas (A2) exceeds 80 % of A1, then A1 shall be considered as one uninterrupted area (see Figure 3). Surfaces whose structure does not allow a ball with 2 mm diameter to penetrate more than 2 mm below highest parts of the structure shall be considered as part of A1 (see Figure 3). | | **P** |
| | If a marked surface (with area A1) includes holes of which the sum of the areas (A3) is less than 20 % of the area of marked surface (A1) it shall be considered as one uninterrupted area (see Figure 4).<br><br>The recorded area of the marked surface(s) shall not be larger than 10 $cm^2$. | | **P** |
| **6.9** | **Stability for low power generating sets** | | **P** |
| **6.9.1** | **Not in operation** | | **P** |
| **6.9.1.1** | **Requirements** | | **P** |
| | Generating sets shall exhibit proof of suitable stability when not in operation. | Tested and OK | **P** |
| | Test shall be conducted with fuel filled to the maximum capacity specified in the manufacturer's instructions. | | **P** |
| **6.9.1.2** | **Verification** | | **P** |
| | Compliance shall be checked by placing the unit on a surface which is tilted 15° in all directions. The unit shall neither overturn nor spill fuel. | Tested and OK | **P** |
| | Units with flaps or doors are tested both with the flaps and doors closed and then with them open. The unit shall satisfy requirements under the worst of conditions. | No such flap or door | **N/A** |
| **6.9.2** | **In operation** | | **P** |
| **6.9.2.1** | **Requirements** | | **P** |
| | Generating sets shall be suitable for operation on mounting surfaces inclined up to 4°. | Tested and OK | **P** |
| **6.9.2.2** | **Verification** | | **P** |

| Absatz *Clause* | Anforderungen - Prüfungen / *Requirements - Tests* | Messergebnisse – Bemerkungen/ *Measuring results - Remarks* | Ergebnis *Result* |
|---|---|---|---|
| | Compliance is checked by operating the unit in four positions set at 90° intervals around the vertical axis on a rough concrete surface inclined up to 4°. The unit shall not change its position by more than 10 mm even after 30 min of operation at no-load and at rated power. | Tested and OK | **P** |
| **6.10** | **Lighting** | | **N/A** |
| **6.10.1** | **Requirement** | | **N/A** |
| | Except for low generating sets and if installed, the lighting of a generating set shall illuminate the control levers, monitoring devices and corresponding walkways with an intensity of at least 20 lux. | Low-power generating sets | **N/A** |
| **6.10.2** | **Verification** | | **N/A** |
| | Compliance with the requirements shall be verified by measurement or technical documentation. | Low-power generating sets | **N/A** |
| **6.11** | **Handling** | | **P** |
| **6.11.1** | **Requirements** | | **P** |
| | Generating sets above 140 kg shall have provisions for lifting attachments to attach lifting devices to lift the generating set or parts of it according to the manufacturers' instructions. | The machine is below 140kg.<br>. | **N/A** |
| | The lifting attachments shall be designed to withstand at least 1,5 times the mass lifted by lifting attachments. The lifting attachments shall be located to allow at least 20 mm clearance between lifting rope or chain or belt and any generating set components, unless the components are designed to withstand the contact during a lifting operation without permanent deformation or damage to the rope, chain or belt. | | **N/A** |
| | The access to the lifting attachments shall allow an easy attachment of the lifting hook or shackle. | | **N/A** |
| | Lifting attachments shall be so located that lifting ropes, chains or belts converge over the centre of gravity (if no cross beam is used) when the generating set or its lifted component is in the normal position specified by the manufacturer. | | **N/A** |
| | Generating sets below 140 kg intended for transportation by persons shall have carrying handles or an adequate frame design to transport it according to the manufacturers' manual. | Metal frame is provided as the lifting device. | **P** |
| | The handles shall be designed to withstand at least 2,5 times the mass lifted divided by the number of carrying handles. | | **P** |
| **6.11.2** | **Verification** | | **P** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | Compliance with the requirements of 6.11.1 regarding the number and the location of the lifting attachments shall be verified by inspection. | Tested and OK | **P** |
| | The strength of the lifting attachments to withstand the mass to be lifted shall be verified by testing or calculation. | 2.5 times of the mass | **P** |
| **6.12** | **Mechanical strength** | | **P** |
| **6.12.1** | **Requirements** | | **P** |
| | Low-power generating sets shall be designed in such a way as to be able to withstand robust handling within the framework of normal operation. All parts, damage to which may impair safety, shall have sufficient mechanical strength. | | **P** |
| | The generating set shall satisfy the tests defined below. | | **P** |
| | a) Subjected to impact using an impact tester.<br><br>Blows are applied to the generating set by means of the spring-operated impact tester according to IEC 60068-2-75.<br><br>The spring is adjusted in such a way as to cause the hammer to strike with an impact energy of 1, 0 J ± 0,05 J.<br><br>The release mechanism springs are adjusted in such a way as to exert just sufficient pressure to keep the release jaws in the engaged position.<br><br>The apparatus is cocked by pulling the cocking knob until the release jaws engage with the groove in the hammer shaft.<br><br>Blows are applied by pushing the release cone against the sample in a direction perpendicular to the surface of the sample at the point to be tested.<br><br>Pressure is slowly increased so that the cone moves back until it is in contact with the release bars, which then move to operate the release mechanism and allow the hammer to strike.<br><br>The entire sample, under no-running conditions, is rigidly held and three blows are applied to every point of the enclosure which is likely to be weak.<br><br>Blows are also applied to protective devices, handles, levers, knobs, etc. | The controls and fuel tank are tested and OK | **P** |
| | b) Free-fall test.<br><br>Before testing the generating set shall be in the usual carrying/transporting condition. It is dropped from a height of 20 cm on to a concrete floor. This test is performed once. | The generating set is tested and OK | **P** |

| Absatz *Clause* | Anforderungen - Prüfungen / *Requirements - Tests* | Messergebnisse – Bemerkungen/ *Measuring results - Remarks* | Ergebnis *Result* |
|---|---|---|---|
| **6.12.2** | **Verification** | | **P** |
| | After completing both tests, the sample shall exhibit no damage which would impair mechanical or electric safety. | Tested and OK | **P** |
| **6.13** | **Fire protection** | | **P** |
| **6.13.1** | **General** | | **P** |
| | The design shall consider hazards from flammable liquids or gases with regard to routing of pipes, location of reservoir, leakage, filling and draining. The possibility of contact with energy sources that could result in a hazard should be minimized. | | **P** |
| **6.13.2** | **Requirements** | | **P** |
| | For the RIC engine, the basic requirements of ISO 6826 shall be met. | | **P** |
| | The orifices and the filling devices of the generating set shall meet the requirements of ISO 6826:1997, 6.2. | No flammable liquid are in contact with high-temperature surface, electrical components and rotating parts during filling the fuel supply. | **P** |
| | The piping for flammable liquids shall meet the requirements of ISO 6826:1997, 7.3 and the draining valves the requirements of ISO 6826:1997, 7.6. | The drain valve is operated manually, and no flammable liquid is in contact with high-temperature surface, electrical components and rotating parts. | **P** |
| | For fuel tanks, the following additional requirements apply. Design requirements:<br>— fuel tanks shall be designed as to ensure that no leaks develop under normal operating conditions;<br>— filler necks in fuel tanks shall be arranged and designed in such a way as to ensure that fuel cans or other devices with spouts can be directly inserted and no fuel can come into contact with hot parts. | Inspected and OK | **P** |
| | Strength requirements:<br>— the tank shall be secured to withstand normal handling;<br>— the tank shall be strong enough to withstand impact during normal handling or be protected from impact. | Tested and OK | **P** |
| | For low power generating sets, the following additional temperature requirement applies.<br>— Any parts of the generating set which are in direct contact with its supporting surface shall not exceed a temperature of 90 °C. | Tested and OK | **P** |

| Absatz *Clause* | Anforderungen - Prüfungen / *Requirements - Tests* | Messergebnisse – Bemerkungen/ *Measuring results - Remarks* | Ergebnis *Result* |
|---|---|---|---|
| **6.13.3** | **Verification** | | **P** |
| | Compliance with the requirements shall be verified by inspection and examination of the engine manufacturer documentation. | | **P** |
| | For low power generating sets, compliance with the fuel tank strength requirements shall be satisfied by testing in accordance with 6.12.1 a). | Impact test is checked on the fuel tank and OK | **P** |
| | For low power generating sets, the temperature measurement shall be done in the same operating conditions as specified in 6.8.3.5. | Temperature test is checked on the supporting and OK | **P** |
| **6.14** | **Hoses, pipes and electrical harnesses of the RIC engine** | | **P** |
| **6.14.1** | **Requirements** | | **P** |
| | Hoses, pipes and electric harnesses, as well as fittings and connectors, shall be designed and made of material to withstand expected pressure, voltage, temperature, abrasion, corrosion, etc. Excessive hose and electric cable length shall be avoided to prevent misuse and obstruction. | | **P** |
| | Hoses and electric harnesses shall be routed and retained so that it is unlikely they will be used as hand holds or footsteps. | | **P** |
| | Hoses and electric harnesses shall not interfere with the accessibility of service points. | | **P** |
| | Hoses and pipe assemblies that can leak flammable liquids or gases onto hot surfaces, shall either be guarded to prevent the liquid going onto the hot surface or be dimensioned to be able to contain twice the operating pressure. In case of fuel pipes, 1,2 times the maximum operating pressure is sufficient. | No flammable liquid is dripping or spraying onto high-temperature surface, the hoses and pipes assemblies are not contact the hot surface. | **P** |
| **6.14.2** | **Verification** | | **P** |
| | Compliance with requirements shall be verified by inspection and examination of the documentation provided by component manufacturers. | Inspected and OK | **P** |
| **6.15** | **Electrical equipment** | | **P** |
| **6.15.1** | **Generating sets** | | **P** |
| **6.15.1 .1** | **Degree of protection** | | **P** |
| | These requirements do not apply to the safety extra low voltage circuits. | | **P** |
| **6.15.1 .1.1** | **Protection against solid foreign objects and protection of persons against access to hazardous parts inside the enclosure** | | **P** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| **6.15.1.1.1** | **Requirements (minimum degree of protection)** | | **P** |
| | a) For generating sets except low power generating sets<br>— generating set: IP2X,<br>— operator interface: IP3X,<br>— live parts on the inside of doors: IP1X, and<br>— switching and control devices: IP4X.<br>NOTE If inside of doors: IP2X. | Low-power generating sets | **N/A** |
| | b) For low power generating sets<br>— generating set: IP2X, and<br>— operator interface: IP3X. | IP2X is considered for the generator part and IP3X is considered for control panel. | **P** |
| **6.15.1.1.2** | **Verification** | | **P** |
| | The degree of protection shall be verified on the generating set in accordance with the test method and acceptance criteria of IEC 60529. | Tested and OK | **P** |
| **6.15.1.2** | **Protection of the equipment inside the enclosure against harmful effects due to the ingress of water** | | **P** |
| **6.15.1.1.2.1** | **Requirements (minimum degree of protection)** | | **P** |
| | a) For generating sets except low power generating sets<br>— generating set: IPX1M, and<br>— operator interface: IPX3M. | Low-power generating sets | **N/A** |
| | b) For low power generating sets<br>— generating set and operator interface: IPX3M. | IPX3M is considered for the generator part and control panel. | **P** |
| **6.15.1.1.2.2** | **Verification** | | **P** |
| | The test method for each degree of protection shall be in accordance with IEC 60529 in operation condition with no load. | | **P** |
| | The test sample for the test shall be in a clean and new condition with all parts in place and mounted in the manner stated by the manufacturer. The degree of protection shall be verified in accordance with the acceptance criteria following a) or b). | | **P** |
| | a) Generating sets except low power generating sets shall comply with the acceptance criteria of IEC 60529. | Low-power generating sets | **N/A** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | b) For the lower power generating sets.<br>After the test against ingress of water,<br>— a dielectric test shall be performed in accordance with IEC 60335-1: 2013, 16.3, Table 7, and<br>— the creepage distance shall comply with IEC 60335-1:2013, 29.2, Table 17. | Tested and OK | **P** |
| **6.15.1.2** | **Insulation** | | **P** |
| **6.15.1.2.1** | **Requirements** | | **P** |
| | The insulation of output circuit shall comply with IEC 60204-1. | | **P** |
| **6.15.1.2.2** | **Verification** | | **P** |
| | Insulation of output circuit shall be verified according to IEC 60204-1:2009, 18.3, 18.4. | Tested according with IEC 60204-1:2009, 18.3, 18.4 | **P** |
| | In addition, for generators equipped with safety extra low-voltage circuits for the output that may be in direct contact of persons with its live parts during the operation, such as the output for battery charging outside the generating sets, or extra low- voltage circuits for control circuits inside generating sets, the generating set windings for these circuits shall be electrically isolated from other windings. | The main windings are electrical separated from the power windings and charging windings / control windings. | **P** |
| | The voltage test according to IEC 60034-1:2010, 9.2 shall be performed between the main and/or excitation windings at:<br>2UN + 2000 V for generating set windings of safety extra low voltage circuit<br>2UN + 1000 V for generating set windings of extra low voltage circuit<br>where, UN is the rated output voltage of the generating set. | Tested and OK | **P** |
| **6.15.1.3** | **Protective bonding circuit** | | **P** |
| **6.15.1.3.1** | **Requirements** | | **P** |
| | The protective bonding circuit shall comply with IEC 60204-1. | Tested according with IEC 60204-1:2009, 18.2 | **P** |
| **6.15.1.3.2** | **Verification** | | **P** |

| Absatz *Clause* | Anforderungen - Prüfungen / *Requirements - Tests* | Messergebnisse – Bemerkungen/ *Measuring results - Remarks* | Ergebnis *Result* |
|---|---|---|---|
| | The function of the protective bonding circuit shall be verified according to IEC 60204-1:2009, 18.2. | Tested and OK | **P** |
| **6.15.1.4** | **Clearances, creepage distances and solid insulation** | | **P** |
| **6.15.1.4.1** | **Requirements** | | **P** |
| | Creepage distances and clearances shall not be less than the values, in mm, in IEC 60335-1:2013, Clause 29. | Tested according with IEC 60335-1:2013, 29 | **P** |
| **6.15.1.4.2** | **Verification** | | **P** |
| | Compliance shall be checked by measurement of the clearances and verification on the basis of manufacturing documents. | Tested and OK | **P** |
| **6.15.2** | **Other electrical equipment** | | **P** |
| | Electrical equipment used to operate the generating set shall meet the requirements of Annex B. | Refer to Annex B | **P** |
| **6.16** | **Noise** | | **P** |
| **6.16.1** | **Requirements** | | **P** |
| | When designing the generating set, the available information and technical measures to control noise at source shall be taken into account, see for example, ISO/TR 11688-1.<br>The main sources of airborne noise on generating sets include the following:<br>— the engine;<br>— the cooling system fan if provided;<br>— the exhaust system. | | **P** |
| **6.16.2** | **Verification** | | **P** |
| | Airborne noise shall be measured as specified in ISO 8528-10:1998, Clause 9 at 75 % of rated power (PRP), except for low power generating sets to ISO 8528-8:2016, 3.3 (COP) and determined according to ISO 8528-10:1998, Clause 13 for the sound power level and according to ISO 8528-10:1998, Clause 14 for the emission sound pressure level. | The sound pressure level and sound power level are informed in the manual. | **P** |
| **6.17** | **Access systems** | | **N/A** |
| **6.17.1** | **Requirements** | | **N/A** |
| | Surfaces of all access system (e.g. walkways and platforms, etc.), if required, shall be slip resistant under the expected use to minimize the possibility of foot slippage. | No access systems | **N/A** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | Access systems shall be level and free from obstructions and protrusions to prevent injury. | | **N/A** |
| | The structure shall be sufficiently sturdy and stable to support any expected load without undue deformation or loss of integrity. | | **N/A** |
| | Access systems shall be designed according to ISO 14122-2:2001 and ISO 14122-2:2001/Amd1:2010. | | **N/A** |
| **6.17.2** | **Verification** | | **N/A** |
| | Compliance with the requirements shall be verified by test or calculation. | No access systems | **N/A** |
| **6.18** | **Access to service points** | | **N/A** |
| **6.18.1** | **Requirement** | | **N/A** |
| | Openings intended for maintenance purposes shall comply with ISO 15534-2. | No such opening | **N/A** |
| **6.18.2** | **Verification** | | **N/A** |
| | Compliance with the requirements shall be verified by inspection and measurement. | No such opening | **N/A** |
| **6.19** | **Gaseous and particulate exhaust emissions** | | **P** |
| **6.19.1** | **Requirement** | | **P** |
| | The exhaust shall be directed away from the generating set control panel. | | **P** |
| | For generating sets intended to be used indoors, the exhaust shall be directed outside.<br><br>NOTE This is the responsibility of the installer, see 7.1. | The generating set does not intend to be used indoors. | **N/A** |
| **6.19.2** | **Verification** | | **P** |
| | Compliance with the requirement shall be verified by inspection. | Inspected and OK | **P** |
| **6.20** | **Drainage** | | **P** |
| **6.20.1** | **Requirements** | | **P** |
| | Provisions shall be made to allow drainage of fuel, coolant and lubrication oil without any spillage. This can be achieved by<br><br>— permanently installed pipework to a collection point, or<br><br>— providing access for collection containers to allow direct drainage, or<br><br>— access to drain plugs without the need to remove guards. | Provisions made to allow drainage of fuel, lubrication oil by providing access to drain plugs without the need to remove guards. | **P** |
| **6.20.2** | **Verification** | | **P** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | Compliance with the requirements shall be verified by inspection. | Inspected and OK | **P** |
| **7** | **Operating and maintenance instructions** | | **P** |
| **7.1** | **Requirements** | | **P** |
| | Operating and maintenance instruction shall comply with ISO 12100:2010, 6.4.5 and shall provide adequate information to enable the generating set to be operated safely and give clear advice concerning its installation, use and maintenance. | English manual is provided | **P** |
| | Extensive use should be made of photographs and/or diagrams. | | **P** |
| | The operating and maintenance instructions shall include, but not be limited, to the following:<br><br>a) general description, in particular description of the generating set nameplate, and explanation of the adjustment points that shall not be modified;<br><br>b) general information concerning the toxicity of exhaust gases, fuel and oil;<br><br>c) information concerning the limitation of use at locations where the risk of fire may be high;<br><br>d) filling with fuel and oil;<br><br>e) starting and stopping;<br><br>f) correct use of batteries;<br><br>g) indications about the hot surfaces and their guards when provided;<br><br>h) routine maintenance instructions;<br><br>i) correct disposal of residual fluids;<br><br>j) indication that the installation and major repair work shall be carried out only by specifically trained personnel;<br><br>k) information on installation precautions, e.g. exhaust system, intake system, cooling system, drainage, fuelling, electrical connection, noise and access;<br><br>l) if necessary advice on the need of personal protection equipment;<br><br>m) in the case of generating sets provided for use by laymen the supplied instructions shall meet the requirements as defined in Annex C; | | **P** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | n) the operation manual shall contain information on sound power level from the generating set and the emission sound pressure level at the operator's position(s) as follows:<br><br>1) A-weighted sound power level (LwA in accordance with ISO 8528-10:1998) emitted by the machine, together with uncertainty of stated values where the equivalent continuous A-weighted emission sound pressure level at the operator's station(s) exceeds 80 dB. The declaration of this value shall have the format of a single number declaration as defined in ISO 4871.<br><br>2) A-weighted emission sound pressure level (LpA) at the operator's station (at a distance of 1 m where no operator station is existing) where this exceeds 70 dB, together with uncertainty of stated values; where this level does not exceed 70 dB, this fact shall be indicated. The declaration of this value shall have the format of a dual-number declaration as defined in ISO 4871.<br><br>3) For indoor generating sets for which the ambient noise levels depend on the conditions of installation, it is not possible to specify these ambient noise levels in the operating and maintenance instructions. In this case, the operating and maintenance instructions shall include a warning about the dangers of airborne noise and on the need for performing, after the installation, acoustic measurements to determine the sound pressure level in the conditions specified in 6.16.2 and for implementing appropriate protective measures if necessary. | | **P** |
| **7.2** | **Verification** | | **P** |
| | Compliance with the requirements shall be verified by examination of the operating and maintenance instructions and then by inspection of the generating set. | Inspected and OK | **P** |
| **8** | **Safety labels** | | **P** |
| **8.1** | **Requirement** | | **P** |
| | The labels shall be clearly visible, legible and indelible. | Rating label and warning label is provided. | **P** |
| | The symbols shall be labelled according to ISO or IEC relevant standards. | The symbols on the safety labels are provided according to ISO 7010. | **P** |
| | Safety labels shall be present on a generating set to inform the user of potential danger if these risks have been identified by the manufacturer. | Labels are present on the machine, related information provided in manual. | **P** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | Low power generating sets shall be labelled with at least the following safety labels:<br>a) read the operator's instruction manual;<br>b) exhaust gas is poisonous; do not operate in an unventilated area [Carbon monoxide (CO) danger];<br>c) not to refuel when operating. | <br><br>Yes<br>Yes<br>Yes | **P** |
| | Safety labels shall be, for example, as shown below. | | **P** |
| **8.2** | **Verification** | | **P** |
| | The conformity of the safety labels shall be verified by inspection. | Inspected and OK | **P** |
| **9** | **Marking** | | **P** |
| **9.1** | **Requirements** | | **P** |
| | Generating sets shall be marked legibly and indelibly with the following minimum information: | Rating label and warning label is provided. | **P** |
| | — the name and address and trademark of the manufacturer and where applicable his authorized representative;<br>— the designation of the machinery "Generating set" or " Low-power generating set "<br>— the designation of series or type1)<br>— the serial number;<br>— the year of construction, that is the year in which the manufacturing process is completed;<br>— mass in kilograms;<br>— the rated power, in kilowatts, with the prefixes COP, PRP, LTP or ESP in accordance with ISO 8528-1:2005, Clause 13;<br>— the performance class in accordance with ISO 8528-1:2005;<br>— the rated power factor;<br>— the rated frequency, in hertz;<br>— the rated voltage, in volts;<br>— the rated current, in amperes; | Yes<br>Yes (Low-power generating set)<br>Yes<br>Yes<br>Yes<br>Yes<br>Yes (COP)<br>Yes<br>Yes<br>Yes<br>Yes<br>Yes | **P** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | — for low power generating sets:<br>— the quality class in accordance with ISO 8528-8:2016, 7.3.2;<br>— the maximum power, in kilowatts, with the prefix MAX in accordance with ISO 8528-8:2016, 3.4;<br>— the degree of protection provided by the generating set (at least IP23M). | <br>Yes<br>Yes (MAX)<br>Yes | **P** |
| | NOTE Information related to the maximum side altitude above sea level (m) and the maximum site ambient temperature (C°) are not relevant for the rating plate but can be made available in a technical documentation. | Yes | **P** |
| **9.2** | **Verification** | | **P** |
| | The conformity of the markings shall be verified by inspection. | Inspected and OK | **P** |
| **Annex A** (normative) | **List of hazards** | List of hazards is provided | **P** |
| **Annex B** (normative) | **Application of IEC 60204-1:2009 for generating sets** | Refer to Annex B | **P** |
| **Annex C** (normative) | **Instruction manual — Safety guide additional requirements for low-power generating sets for use by laymen** | Inspected and OK | **P** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | **Annex B**<br><br>**Application of IEC 60204-1:2009 for generating sets** | | |
| **1** | **Scope** | | **P** |
| | IEC 60204-1:2009, Clause 1 is replaced as follows.<br><br>This part of IEC 60204 is applicable to the electrical equipment or parts of the electrical equipment that operate with nominal supply voltages not exceeding 1 000 V for alternating current (a.c.) and not exceeding 1 500 V for direct current (d.c.), and with nominal supply frequencies not exceeding 200 Hz. | AC230V/50Hz | **P** |
| **2** | **Normative references** | | **-** |
| **3** | **Terms and definitions** | | **-** |
| **4** | **General requirements** | | **P** |
| | IEC 60204-1:2009, Clause 4 is replaced as follows:<br><br>It is impracticable for manufacturers of generating sets to specify the type of system earthing on the load side. The following shows the types of system earthling (TN, TT, IT) and the corresponding types of system earthing for generating sets.<br><br>Types of system earthing (Generating sets & Load) / Types of system earthing (Generating sets only)<br>TN system / Neutral bonded<br>TT system /<br>IT system / Neutral unbonded/Neutral high-impedance bonded<br>NOTE Requirements for types of system earthing covered by this standard are applicable only to generating sets of the corresponding types of system earthling. | Types of system earthing (Generating sets & Load) is IT system, and the Neutral is unbounded. | **P** |
| **4.1** | **General considerations** | | **P** |
| **4.2** | **Selection of equipment** | | **P** |
| **4.2.1** | **General** | | **P** |
| | IEC 60204-1:2009, 4.2.1is replaced as follows:<br><br>Electrical components and devices shall<br><br>— be suitable for their intended use, and<br><br>— electrical components important to safety (for example receptacle, circuit protector, conducting wire) shall comply with the safety requirements stipulated in the applicable ISO, IEC or national standards. | The safety electrical components such as AC socket outlet, Circuit breaker etc. comply with the international standard. | **P** |
| **4.2.2** | **Electrical equipment in compliance with the EN 60439 series** | No such switch used | **N/A** |
| **4.3** | **Electrical supply** | | **P** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | IEC 60204-1:2009, 4.3 is replaced as follows:<br><br>Contrary to IEC 60204-1, the following requirements apply to generating sets.<br><br>Electrical equipment of generating sets, which is supplied by the generator of the generating sets itself, shall work without any failure under the rated conditions of the generating sets according to ISO 8528-1:2005, Clause 7 and ISO 8528-5:2013, Clause 16.<br><br>For low power generating sets, ISO 8528-8:2016, Clause 7 applies. | Comply with ISO 8528-8:2016 clause 7 | **P** |
| | If not otherwise agreed, the electrical equipment which is not supplied by the generator of the generating set shall meet the requirements according IEC 60204-1:2009, 4.3. | No additional electrical supply | **N/A** |
| | In case the generator supplies electrical equipment of machinery, the supply requirements according to IEC 60204-1:2009, 4.3.1 apply. The requirements shall be agreed between user and manufacturer especially in view of the transient behaviour during load changes. | | **P** |
| **4.4** | **Physical environment and operating conditions** | | **P** |
| **4.4.1** | **General** | Related information is provided in the manual. | **P** |
| **4.4.2** | **Electromagnetic compatibility (EMC)** | Not applicable | **N/A** |
| **4.4.3** | **Ambient air temperature** | Not applicable | **N/A** |
| **4.4.4** | **Humidity** | | **P** |
| | IEC 60204-1:2009, 4.4.4 is replaced as follows:<br><br>Instead of the values given in IEC 60204-1:2009, generating sets shall meet the limit values according to ISO 8528-1:2005, Clauses 10 and 11.<br><br>Low power generating sets shall meet the limit values according ISO 8528-8:2016, Clause 7. Deviations from those values shall be agreed between manufacturer and user. | Low power generating sets, comply with ISO 8528-8:2016 clause 7. | **P** |
| **4.4.5** | **Altitude** | | **P** |
| **4.4.6** | **Contaminants** | Not applicable | **N/A** |
| **4.4.7** | **Lonizing and non-ionizing radiation** | Not applicable | **N/A** |
| **4.4.8** | **Vibration, shock, and bump** | | **P** |
| **4.5** | **Transportation and storage** | | **P** |
| **4.6** | **Provision for handling** | | **P** |

| Absatz *Clause* | Anforderungen - Prüfungen / *Requirements - Tests* | Messergebnisse – Bemerkungen/ *Measuring results - Remarks* | Ergebnis *Result* |
|---|---|---|---|
| **4.7** | **Installation** | The electrical equipment of the generating set are fixed on the machine. | **N/A** |
| **5** | **Incoming supply conductor terminations and devices for disconnecting and switching off** | | **P** |
| **5.1** | **Incoming supply conductor terminations** | | **N/A** |
| | IEC 60204-1:2009, 5.1 is replaced as follows:<br><br>Contrary to IEC 60204-1 for generating sets, dependent from the demanded protection measure, a connection between neutral conductor and protective bonding circuit may be required. | No connection between neutral conductor and protective bonding circuit. | **N/A** |
| | If generating sets are used as standby-to-mains-units, an electrical and/or mechanical interlocking system is necessary to avoid parallel operation (see ISO 8528-4). | The generating sets are not used as standby-to-mains-units. | **N/A** |
| | If generating sets are operating parallel to the mains or other generating sets, additional equipment for synchronising and protection including any controls or instrumentation shall be provide if needed (see ISO 8528-4). | The generating sets are not used to be operated parallel to the mains or generating sets. | **N/A** |
| **5.2** | **Terminal for connection to the external protective earthing system** | | **P** |
| | IEC 60204-1:2009, 5.2 is replaced as follows:<br><br>The generating sets shall have a terminal for the connection of an external protective conductor and/or a functional grounding near the associated phase conductor terminal, or on a suitable place at the generating set frame. The requirements for this terminal shall be according to IEC 60204-1:2009, 5.2. If the use of this terminal at delivery of the generating sets is unknown, it shall be delivered and marked with the symbol 5019 of IEC 60417-DB-12M:2002. | Terminal for the connection of an external protective conductors are provided. Marked with IEC symbol 60417-IEC-5019. | **P** |
| **5.3** | **Supply disconnecting (isolating) device** | | **P** |
| | IEC 60204-1:2009, 5.3 is replaced as follows:<br><br>For generating sets in single operation, which provide power supply to various electrical equipment through a plug-type device, the electrical disconnection through the plug-type device up to 32 A or a protection switch above 32 A at the generating sets with manual operation is permitted. | The socket outlet is provided and not exceeds 32A. | **P** |
| | For generating sets in single operation, standby-to mains operation or parallel-to mains operation, which provides power to a consumer net, ISO 8528-4:2005, 5.2 applies. | The generating sets are not used as standby-to-mains-units. | **N/A** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | Electrical equipment which is necessary for the operation of the generating set and which is not only supplied by the generator shall be equipped with a separate disconnecting device. | The electrical equipment is only supplied by the generator. | **N/A** |
| | For generating sets used for stand-by operation a separate disconnecting device for secondary machines should be necessary. | The generating set is not used as standby-to-mains-units. | **N/A** |
| **5.4** | **Devices for switching off for prevention of unexpected start-up** | | **P** |
| | IEC 60204-1:2009, 5.4 is replaced as follows:<br><br>Such devices are only necessary for generating sets with a remote starting device or an automatic starting device if there is any danger of an unexpected start. An emergency stop button should be used as such a device. | Low-power generating set, no such risk. An engine stop switch is provided on the machine. | **P** |
| **5.5** | **Devices for disconnecting electrical equipment** | Main disconnect by socket outlet. | **P** |
| **5.6** | **Protection against unauthorized, inadvertent and/or mistaken connection** | Main disconnect by socket outlet. | **P** |
| **6** | **Protection against electric shock** | | **P** |
| **6.1** | **General** | | **P** |
| **6.2** | **Protection against direct contact** | | **P** |
| **6.2.1** | **General** | | **P** |
| | IEC 60204-1:2009, 6.2.1 is replaced as follows:<br><br>For each circuit or part of the electrical equipment, the measures of either 6.15.1.1 or 6.15.1.2 and, where applicable, IEC 60204-1:2009, 6.2.4 shall be applied.<br><br>Exception: where those measures are not appropriate, other measures for protection against direct contact (for example by using barriers, by placing out of reach, using obstacles, using construction or installation techniques that prevent access) as defined in IEC 60364-4-41 shall be applied (see IEC 60204-1:2009, 6.2.5 and 6.2.6). | IP23M is tested and OK. | **P** |
| **6.2.2** | **Protection by enclosures** | Living parts are protected by enclosure. | **P** |
| **6.2.3** | **Protection by insulation of live parts** | Living parts are insulated. | **P** |
| **6.2.4** | **Protection against residual voltage** | No residual voltage exists after the engine stopped. | **P** |
| **6.2.5** | **Protection by barriers** | No such barrier | **N/A** |
| **6.2.6** | **Protection by placing out of reach or protection by obstacles** | No such obstacle | **N/A** |
| **6.3** | **Protection against indirect contact** | | **P** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| **6.3.1** | **General** | | **P** |
| | IEC 60204-1:2009, 6.3.1 is replaced as follows:<br><br>For each circuit or part of the generating set, at least one of the measures as prescribed in B.5.2.1.1 and B.5.2.1.2 shall be applied.<br><br>— measures to prevent the occurrence of a touch voltage (B.5.2.1.1);<br><br>— automatic disconnection of the supply before the duration of contact with a touch voltage can become hazardous (B.5.2.1.2). | The AC output circuit is comply with B.5.2.1.2. | **P** |
| **6.3.2** | **Prevention of the occurrence of a touch voltage** | | **N/A** |
| **6.3.2.1** | **General** | | **N/A** |
| **6.3.2.2** | **Protection by provision of class II equipment or by equivalent insulation** | Class I | **N/A** |
| **6.3.2.3** | **Protection by electrical separation** | | **N/A** |
| | IEC 60204-1:2009, 6.3.2.3 is replaced as follows:<br><br>Electrical separation of an individual circuit is intended to prevent a touch voltage through contact with exposed conductive parts that can be energized by a fault in the basic insulation of the live parts of that circuit. For this type of protection, the requirement of IEC 60364-4-41:2005, 413 apply. | No such circuit | **N/A** |
| **6.3.3** | **Protection by automatic disconnection of supply** | | **P** |
| | IEC 60204-1:2009, 6.3.3 is replaced as follows:<br><br>This measure consists of the interruption of one or more of the line conductors by the automatic operation of a protective device in case of a fault. This interruption shall occur within a sufficiently short time to limit the duration of a touch voltage to a time within which the touch voltage is not hazardous. Interruption times are given in IEC 60204-1:2009, Annex A. | The circuit breaker is protected to cut off the output voltage below 50V within 0.4s. | **P** |
| | This measure necessitates co-ordination between the following:<br><br>— the type of supply and earthling system;<br><br>— the impedance values of the different elements of the protective bonding system;<br><br>— the characteristics of the protective devices that detect insulation fault(s). | Tested and OK | **P** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | Automatic disconnection of the supply of any circuit affected by an insulation fault is intended to prevent a hazardous situation resulting from a touch voltage.<br><br>This protective measure comprises both<br><br>— protective bonding of exposed conductive parts (see IEC 60204-1:2009, 8.2.3)<br><br>— and either: one of the following solutions (a or b).<br><br>a) for neutral bonded generating sets, residual current protective device and overcurrent protective devices for the automatic disconnection of the supply on detection of an insulation fault.<br><br>In case the generating set is intended to use for TN-C system, the residual current protective devise is not required.<br><br>b) for neutral unbounded/neutral high-impedance bonded generating sets, insulation monitoring device and overcurrent protective devices for the automatic disconnection of the supply on detection of an insulation fault.<br><br>The insulation monitoring device shall, in the case where the supply is not interrupted in the event of the first earth fault, initiate an audible and/or visual signal which shall continue as long as the first earth fault persists.<br><br>Insulation monitoring devices are not required for generating sets not intended to be fixed installed for continuous use of the power supply.<br><br>NOTE In large machines, the provision of an earth fault location system can facilitate maintenance.<br><br>Residual current protective device and Insulation monitoring device shall correspond to ISO 8528-4:2005, 7.3.7. | The automatic disconnection protective device comprises both protective bonding of:<br><br>- exposed conductive parts and<br><br>- b) neutral unbounded generating set<br><br>Low power generating set, insulation monitoring devices are not required.<br><br>The machine is not intended to fix installed for continuous use of the power supply. No insulation monitoring device or RCD is provided. | **P** |
| | Overcurrent protective devices, residual current protective devices and insulation monitoring devices may not be integrated by the manufacturer in generating sets provided, however, that information on characteristics of these devices and their installation by the user (grounding of neutral, connection distance to the generating set) shall be included in the use and instructions manual. | | **N/A** |
| | When a protection by differential current is needed or imposed as complementary protection, only residual differential devices not exceeding 30 mA shall be used. | | **N/A** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | Overcurrent protective devices to initiate automatic disconnection of the supply on detection of an insulation fault shall be those correctly sized taking into account the impedance of the generator and the short circuit behaviour of the generating sets; the fuses are not allowed. | The circuit breaker is used as the overcurrent protective device.<br><br>No AC fuse is used. | **P** |
| | The overcurrent protective device shall cause a reduction of voltage to a value lower or equal to 50 V in a time complying with values of IEC 60204-1:2009, Annex A or a disconnection of supply. | The circuit breaker is protected to cut off the output voltage below 50V within 0.4s. | **P** |
| | For polyphaser generators, this requirement shall be verified in case of short-circuit between two phase conductors and between a phase conduct and an eventual neutral conductor. | Single phase | **N/A** |
| | For low power generating sets, this requirement shall be verified by a test of a short-circuiting with a resistance of 1,5 Ω behind the outputs of the generating set.<br><br>These requirements shall be verified by visual checking, operation test and control of use and instructions manual. | Tested and OK | **P** |
| **6.4** | **Protection by the use of PELV** | DC output is protected by PELV | **P** |
| **7** | **Protection of equipment** | | **P** |
| **7.1** | **General** | | **P** |
| **7.2** | **Overcurrent protection** | Not applicable | **N/A** |
| **7.3** | **Protection of motors against overheating** | The temperature rise of the generator is tested and within the limit. | **P** |
| **7.4** | **Abnormal temperature protection** | No heating device | **N/A** |
| **7.5** | **Protection against supply interruption or voltage reduction and subsequent restoration** | Not applicable | **N/A** |
| **7.6** | **Motor over speed protection** | Not applicable | **N/A** |
| **7.7** | **Earth fault/residual current protection** | No earth fault/residual current protection device | **N/A** |
| **7.8** | **Phase sequence protection** | Single phase | **N/A** |
| **7.9** | **Protection against overvoltage due to lightning and to switching surge** | No such protection device | **N/A** |
| **8** | **Equipotential bonding** | | **P** |
| **8.1** | **General** | | **P** |
| **8.2** | **Protective conductors** | | **P** |
| **8.2.1** | **General** | | **P** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| **8.2.2** | **Protective conductors** | | **P** |
| | IEC 60204-1:2009, 8.2.1 is replaced as follows:<br>The protective bonding circuit consists of the following:<br>— PE terminal(s) (see B.4.2);<br>— the protective conductors in the equipment of the machine including sliding contacts where they are part of the circuit;<br>— the exposed conductive parts and conductive structural parts of the electrical equipment;<br>— those extraneous conductive parts which form the structure of the machine. | All exposed conductive parts are interconnected through a protective conductor and earthed to the PE terminal. | **P** |
| | All parts of the protective bonding circuit shall be so designed that they are capable of withstanding the highest thermal and mechanical stresses that can be caused by earth-fault currents that could flow in that part of the protective bonding circuit. | Inspected and OK | **P** |
| | Where the conductance of structural parts of the electrical equipment or of the machine is less than that of the smallest protective conductor connected to the exposed conductive parts, a supplementary bonding conductor shall be provided. This supplementary bonding conductor shall have a cross-sectional area not less than half that of the corresponding protective conductor. | | **N/A** |
| | Except for low power generating sets, if an IT distribution system is used, the machine structure shall be part of the protective bonding circuit and insulation monitoring shall be provided. See B.5.2.1.2b). | Low-power generating set | **N/A** |
| | Exposed conductive parts of equipment in accordance with B.5.2.1.1 shall not be connected to the protective bonding circuit. | | **N/A** |
| **8.2.3** | **Continuity of the protective bonding circuit** | | **P** |
| **8.2.4** | **Exclusion of switching devices from the protective bonding circuit** | | **P** |
| **8.2.5** | **Parts that need not be connected to the protective bonding circuit** | | **P** |
| **8.2.6** | **Protective conductor connecting points** | Terminal for the connection of an external protective conductors are provided. Marked with IEC symbol 60417-IEC-5019. | **P** |
| **8.2.7** | **Mobile machines** | Not applicable | **N/A** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| **8.2.8** | **Additional protective bonding requirements for electrical equipment having earth leakage current higher than 10mA a.c. or d.c.** | Not applicable | **N/A** |
| **8.3** | **Functional bonding** | Not applicable | **N/A** |
| **8.4** | **Measures to limit the effects of high leakage current** | Not applicable | **N/A** |
| **9** | **Control circuits and control functions** | Not applicable | **N/A** |
| **10** | **Operator interface and machine-mounted control devices** | | **P** |
| **10.1** | **General** | Not applicable | **N/A** |
| **10.2** | **Push-buttons** | No such device | **N/A** |
| **10.3** | **Indicator lights and displays** | | **P** |
| **10.4** | **Illuminated push-buttons** | No such device | **N/A** |
| **10.5** | **Rotary control devices** | No such device | **N/A** |
| **10.6** | **Start devices** | Not applicable | **N/A** |
| **10.7** | **Emergency stop devices** | Not applicable | **N/A** |
| **10.8** | **Emergency switching off devices** | Not applicable | **N/A** |
| **10.9** | **Enabling control device** | No such device | **N/A** |
| **11** | **Control gear: location, mounting and enclosures** | | **P** |
| **11.1** | **General requirements** | | **P** |
| **11.2** | **Location and mounting** | | **P** |
| **11.3** | **Degrees of protection** | Not applicable | **N/A** |
| **11.4** | **Enclosures, doors and openings** | | **P** |
| **11.5** | **Access to control gear** | No such control gear | **N/A** |
| **12** | **Conductors and cables** | | **P** |
| **12.1** | **General requirements** | Conductors are grouped | **P** |
| **12.2** | **Conductors** | | **P** |
| **12.3** | **Insulation** | The insulation of internal wires can withstand AC2000V for 5 min. | **P** |
| **12.4** | **Current-carrying capacity in normal service** | The current-carrying capacity of the internal wire comply with Table 6. | **P** |
| **12.5** | **Conductor and cable voltage drop** | | **P** |
| **12.6** | **Flexible cables** | No flexible cables | **N/A** |
| **12.7** | **Conductor wires, conductor bars and slip-ring assemblies** | No such components | **N/A** |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| **13** | **Wiring Practices** | | **P** |
| **13.1** | **Connections and routing** | All connections are secured and fixed by the bolts. | **P** |
| **13.2** | **Identification of conductors** | All conductors are identified by colour code.<br>GREEN-AND-YELLOW is used for the protective earthing circuit only. | **P** |
| **13.3** | **Wiring inside enclosures** | | **P** |
| | See IEC 60204-1:2009, 13.3.<br>Flame-retardant cable ducts are not required. | Conductors inside enclosures are kept in place. | **P** |
| **13.4** | **Wiring outside enclosures** | No wiring outside enclosures | **N/A** |
| **13.5** | **Ducts, connection boxes and other boxes** | No such device | **N/A** |
| **14** | **Electric Motors and associated Equipment** | No electric motors | **N/A** |
| **15** | **Accessories and lighting** | Not applicable | **N/A** |
| **16** | **Marking, warning signs and reference designations** | Not applicable | **N/A** |
| **17** | **Technical Documentation** | Not applicable | **N/A** |
| **18** | **Verification** | Tested and OK | **P** |

**Rating labels**

(Selected **EYG3900G** and **EYG9000GE** for representative rating labels, other models' rating label are same as the representative rating labels except for the model name and parameters.)

| GASOLINE GENERATOR SET<br>Low-power generating set | | |
|---|---|---|
| Type | **EYG3900G** | |
| S/N | EYG3900G-23001 | |
| Voltage | 230 VAC | |
| Rated Frequency | 50 Hz | |
| AC output | COP 3.1 kW | |
| Max. power | MAX 3.15 kW S2 5 min | |
| Power factor | 1.0 | |
| Speed | 3000 /min | |
| Rated current | 13.5 A | |
| Performance class | G1 | |
| Quality class | B | |
| Weight | 40 kg | |
| Max. Temperature: 40 °C | IP23M | |
| Max. Altitude: 1000 m | BJ2023 | |
| Zhejiang Leiya Electronics Co., Ltd<br>No.528 4th Avenue, Binhai Economic And Technological Development Zone, 325000<br>Wenzhou, Zhejiang, PEOPLE'S REPUBLIC OF China | | |

| GASOLINE GENERATOR SET<br>Low-power generating set | | |
|---|---|---|
| Type | **EYG9000GE** | |
| S/N | EYG9000GE-23001 | |
| Voltage | 230 VAC | |
| Rated Frequency | 50 Hz | |
| AC output | COP 7.0 kW | |
| Max. power | MAX 7.5 kW S2 5 min | |
| Power factor | 1.0 | |
| Speed | 3000 /min | |
| Rated current | 30.4 A | |
| Performance class | G1 | |
| Quality class | B | |
| Weight | 84 kg | |
| Max. Temperature: 40 °C | IP23M | |
| Max. Altitude: 1000 m | BJ2023 | |
| Zhejiang Leiya Electronics Co., Ltd<br>No.528 4th Avenue, Binhai Economic And Technological Development Zone, 325000<br>Wenzhou, Zhejiang, PEOPLE'S REPUBLIC OF China | | |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|

**Attachment table: Critical Components**

| **EYG3900G, EYG3900GE** | | | | | |
|---|---|---|---|---|---|
| **Object/ part No.** | **Manufacturer/ trademark** | **Type/ model** | **Technical data** | **Standard** | **Mark(s) of conformity** |
| 1.0 Engine | Zhejiang Leiya Electronics Co., Ltd. | LY170F2 | Power: 4.30kW/3000min$^{-1}$<br>Displacement: 223 cm$^3$ | EN ISO 8528-13 | Test with machine |
| 2.0 Generator | Zhejiang Leiya Electronics Co., Ltd. | Copper Class F | Main winding: 0.997Ω<br>Aux. winding: 2.178Ω<br>DC winding: N/A<br>(25 ℃) | EN ISO 8528-13 | Test with machine |
| 3.0 Socket Outlet | Zhejiang Kaibao Electrical Equipment | XB-220S | AC 250V 16A IP54 | DIN VDE 0620-1 | TUV mark B150357729008 |
| (alternative) | Zhejiang Kaibao Electrical Equipment | PQ-226S | AC 250V 16A IP44 | DIN VDE 0620-1 | TUV mark B150357729008 |
| (alternative) | Zhangjiaggang UCHEN New Energy Technology Co., Ltd. | B-013 | AC 250V 16A IP44 | DIN VDE 0620-1 | TUV mark J50402209 |
| (alternative) | Zhejiang Suoben Electric Co., Ltd. | 02021602 | AC 250V 16A IP44 | DIN VDE 0620-1 | TUV mark J50448437 |
| (alternative) | Zhejiang Suoben Electric Co., Ltd. | 05021601 | AC 250V 16A IP44 | NF C 61-314 | TUV mark R50442225 |
| (alternative) | Zhejiang Suoben Electric Co., Ltd. | 05031302 | AC 250V 13A IP44 | BS 1363-2 | TUV mark R50450825 |
| 4.0 Circuit breaker | Zhejiang BSB Electrical Appliances Co., Ltd. | BSB1-30 | AC230V 50/60Hz 13.4 A | EN IEC 60934 | TUV mark R50129667 |
| 5.0 Voltmeter | Fuding Santai Electric Co., Ltd. | 91L4 | 0~300 V with metal guard | EN ISO 8528-13 | Test with machine |
| 6.0 Battery for electrical starting | SICHUAN LIYANG INDUSTRY CO.,LTD | 6-FM-12 | DC12V 12Ah | IEC 62321-4<br>IEC 62321-5 | CE<br>TMC201218111-C |
| 7.0 Internal living wire in generator | XINGDA ELECTRONICS WIRE & CABLE CO LTD | 3321 | 600 Va.c. 150 °C 14 AWG | UL 758 | UL mark E187208 |
| (alternative) | ZHE JIANG CHENG BAO WIRE & CABLE CO LTD | 3321 | 600 Va.c. 150 °C 14 AWG | UL 758 | UL mark E315651 |
| (alternative) | QIFURUI ELECTRONICS CO., LTD | 3321 | 600 Va.c. 150 °C 14 AWG | UL 758 | UL mark E211048 |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|

**Attachment table: Critical Components**

| **EYG3900G, EYG3900GE** | | | | | |
|---|---|---|---|---|---|
| **Object/ part No.** | **Manufacturer/ trademark** | **Type/ model** | **Technical data** | **Standard** | **Mark(s) of conformity** |
| 8.0 Internal living wire in panel | Echu Special Wire & Cable (KunShan) Co., Ltd. | H07V-K | 450/750 Va.c. 2.5mm$^2$ | EN ISO 8528-13 | Test with machine |
| (alternative) | Dongguan Yongsheng Cables Technology Co., Ltd. | H07V-K | 450/750 Va.c. 2.5mm$^2$ | EN 50525-2-31 | VDE mark 40049138 |
| (alternative) | QIFURUI ELECTRONICS CO., LTD | H07V-K | 450/750 Va.c. 2.5mm$^2$ | EN 50525-2-31 | VDE mark 40050652 |
| (alternative) | XINGDA ELECTRONICS WIRE & CABLE CO LTD | 1007 | 300 Va.c. 80 °C 14 AWG | UL 758 | UL mark E187208 |
| (alternative) | ZHE JIANG CHENG BAO WIRE & CABLE CO LTD | 1007 | 300 Va.c. 80 °C 14 AWG | UL 758 | UL mark E315651 |
| (alternative) | QIFURUI ELECTRONICS CO., LTD | 1007 | 300 Va.c. 80 °C 14 AWG | UL 758 | UL mark E211048 |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|

**Attachment table: Critical Components**

| **EYG6500G, EYG6500GE** | | | | | |
|---|---|---|---|---|---|
| **Object/ part No.** | **Manufacturer/ trademark** | **Type/ model** | **Technical data** | **Standard** | **Mark(s) of conformity** |
| 1.0 Engine | Zhejiang Leiya Electronics Co., Ltd. | LY190F1 | Power: 8.4kW/3000min$^{-1}$<br>Displacement: 420 cm$^3$ | EN ISO 8528-13 | Test with machine |
| 2.0 Generator | Zhejiang Leiya Electronics Co., Ltd. | Copper Class F | Main winding: 0.453Ω<br>Aux. winding: 2.463Ω<br>DC winding: 0.120Ω<br>(25 ℃) | EN ISO 8528-13 | Test with machine |
| 3.0 Socket Outlet | Zhejiang Kaibao Electrical Equipment | XB-220S | AC 250V 16A IP54 | DIN VDE 0620-1 | TUV mark B150357729008 |
| (alternative) | Zhejiang Kaibao Electrical Equipment | PQ-226S | AC 250V 16A IP44 | DIN VDE 0620-1 | TUV mark B150357729008 |
| (alternative) | Zhangjiaggang UCHEN New Energy Technology Co., Ltd. | B-013 | AC 250V 16A IP44 | DIN VDE 0620-1 | TUV mark J50402209 |
| (alternative) | Zhejiang Suoben Electric Co., Ltd. | 02021602 | AC 250V 16A IP44 | DIN VDE 0620-1 | TUV mark J50448437 |
| (alternative) | Zhejiang Suoben Electric Co., Ltd. | 05021601 | AC 250V 16A IP44 | NF C 61-314 | TUV mark R50442225 |
| (alternative) | Zhejiang Suoben Electric Co., Ltd. | 05031302 | AC 250V 13A IP44 | BS 1363-2 | TUV mark R50450825 |
| 4.1 Circuit breaker for AC output | Zhejiang BSB Electrical Appliances Co., Ltd. | BSB1-30 | AC230V 50/60Hz 21.7A | EN IEC 60934 | TUV mark R50129667 |
| 4.2 Circuit breaker for socket outlet | Wokema Electric (Zhejiang) Co., Ltd. | W55-x | AC125/250V; 50/60Hz<br>DC50V<br>16A | EN 60934 | TUV mark R50239241 |
| (alternative) | Topstone Corp. | L2 | AC125/250V; 50/60Hz<br>DC50V<br>16A | EN 60934 | TUV mark R50046704 |
| (alternative) | Kuoyuh W.L. Enterprise Co. Ltd. | 91 series | AC125/250V; 50/60Hz<br>DC50V<br>16A | EN 60934 | TUV mark B160658611008 |
| 5.0 Circuit breaker for DC output | Wokema Electric (Zhejiang) Co., Ltd. | W55-x | AC125/250V; 50/60Hz<br>DC50V<br>10A | EN 60934 | TUV mark R50239241 |
| (alternative) | Topstone Corp. | L2 | AC125/250V; 50/60Hz<br>DC50V<br>10A | EN 60934 | TUV mark R50046704 |
| (alternative) | Kuoyuh W.L. Enterprise Co. Ltd. | 91 series | AC125/250V; 50/60Hz<br>DC50V<br>10A | EN 60934 | TUV mark B160658611008 |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|

**Attachment table: Critical Components**

| **EYG6500G, EYG6500GE** | | | | | |
|---|---|---|---|---|---|
| **Object/ part No.** | **Manufacturer/ trademark** | **Type/ model** | **Technical data** | **Standard** | **Mark(s) of conformity** |
| 6.0 Voltmeter | Fuding Santai Electric Co., Ltd. | 91L4 | 0~300 V with metal guard | EN ISO 8528-13 | Test with machine |
| 7.0 Battery for electrical starting | SICHUAN LIYANG INDUSTRY CO.,LTD | 6-FM-12 | DC12V 12Ah | IEC62321-4 IEC62321-5 | CE TMC201218111-C |
| 8.0 Internal living wire in generator | XINGDA ELECTRONICS WIRE & CABLE CO LTD | 3321 | 600 Va.c. 150 °C 14 AWG | UL 758 | UL mark E187208 |
| (alternative) | ZHE JIANG CHENG BAO WIRE & CABLE CO LTD | 3321 | 600 Va.c. 150 °C 14 AWG | UL 758 | UL mark E315651 |
| (alternative) | QIFURUI ELECTRONICS CO., LTD | 3321 | 600 Va.c. 150 °C 14 AWG | UL 758 | UL mark E211048 |
| 9.0 Internal living wire in panel | Echu Special Wire & Cable (KunShan) Co., Ltd. | H07V-K | 450/750 Va.c. 2.5mm$^2$ | EN ISO 8528-13 | Test with machine |
| (alternative) | Dongguan Yongsheng Cables Technology Co., Ltd. | H07V-K | 450/750 Va.c. 2.5mm$^2$ | EN 50525-2-31 | VDE mark 40049138 |
| (alternative) | QIFURUI ELECTRONICS CO., LTD | H07V-K | 450/750 Va.c. 2.5mm$^2$ | EN 50525-2-31 | VDE mark 40050652 |
| (alternative) | XINGDA ELECTRONICS WIRE & CABLE CO LTD | 1007 | 300 Va.c. 80 °C 14 AWG | UL 758 | UL mark E187208 |
| (alternative) | ZHE JIANG CHENG BAO WIRE & CABLE CO LTD | 1007 | 300 Va.c. 80 °C 14 AWG | UL 758 | UL mark E315651 |
| (alternative) | QIFURUI ELECTRONICS CO., LTD | 1007 | 300 Va.c. 80 °C 14 AWG | UL 758 | UL mark E211048 |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|

**Attachment table: Critical Components**

| **EYG8000G, EYG8000GE** | | | | | |
|---|---|---|---|---|---|
| **Object/ part No.** | **Manufacturer/ trademark** | **Type/ model** | **Technical data** | **Standard** | **Mark(s) of conformity** |
| 1.0 Engine | Zhejiang Leiya Electronics Co., Ltd. | LY192F1 | Power: 8.7kW/3000min$^{-1}$<br>Displacement: 439 cm$^3$ | EN ISO 8528-13 | Test with machine |
| 2.0 Generator | Zhejiang Leiya Electronics Co., Ltd. | Copper Class F | Main winding: 0.455Ω<br>Aux. winding: 1.683Ω<br>DC winding: 0.106Ω<br>(25 ℃) | EN ISO 8528-13 | Test with machine |
| 3.0 Socket Outlet | Zhejiang Kaibao Electrical Equipment | XB-220S | AC 250V 16A IP54 | DIN VDE 0620-1 | TUV mark B150357729 008 |
| (alternative) | Zhejiang Kaibao Electrical Equipment | PQ-226S | AC 250V 16A IP44 | DIN VDE 0620-1 | TUV mark B150357729 008 |
| (alternative) | Zhangjiaggang UCHEN New Energy Technology Co., Ltd. | B-013 | AC 250V 16A IP44 | DIN VDE 0620-1 | TUV mark J50402209 |
| (alternative) | Zhejiang Suoben Electric Co., Ltd. | 02021602 | AC 250V 16A IP44 | DIN VDE 0620-1 | TUV mark J50448437 |
| (alternative) | Zhejiang Suoben Electric Co., Ltd. | 05021601 | AC 250V 16A IP44 | NF C 61-314 | TUV mark R50442225 |
| (alternative) | Zhejiang Suoben Electric Co., Ltd. | 05031302 | AC 250V 13A IP44 | BS 1363-2 | TUV mark R50450825 |
| 4.1 Circuit breaker for AC output | Zhejiang BSB Electrical Appliances Co., Ltd. | BSB1-30 | AC230V 50/60Hz 26A | EN IEC 60934 | TUV mark R50129667 |
| 4.2 Circuit breaker for socket outlet | Wokema Electric (Zhejiang) Co., Ltd. | W55-x | AC125/250V; 50/60Hz<br>DC50V<br>16A | EN 60934 | TUV mark R50239241 |
| (alternative) | Topstone Corp. | L2 | AC125/250V; 50/60Hz<br>DC50V<br>16A | EN 60934 | TUV mark R50046704 |
| (alternative) | Kuoyuh W.L. Enterprise Co. Ltd. | 91 series | AC125/250V; 50/60Hz<br>DC50V<br>16A | EN 60934 | TUV mark B160658611 008 |
| 5.0 Circuit breaker for DC output | Wokema Electric (Zhejiang) Co., Ltd. | W55-x | AC125/250V; 50/60Hz<br>DC50V<br>10A | EN 60934 | TUV mark R50239241 |
| (alternative) | Topstone Corp. | L2 | AC125/250V; 50/60Hz<br>DC50V<br>10A | EN 60934 | TUV mark R50046704 |
| (alternative) | Kuoyuh W.L. Enterprise Co. Ltd. | 91 series | AC125/250V; 50/60Hz<br>DC50V<br>10A | EN 60934 | TUV mark B160658611 008 |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|

**Attachment table: Critical Components**

| **EYG8000G, EYG8000GE** | | | | | |
|---|---|---|---|---|---|
| **Object/ part No.** | **Manufacturer/ trademark** | **Type/ model** | **Technical data** | **Standard** | **Mark(s) of conformity** |
| 6.0 Voltmeter | Fuding Santai Electric Co., Ltd. | 91L4 | 0~300 V with metal guard | EN ISO 8528-13 | Test with machine |
| 7.0 Battery for electrical starting | SICHUAN LIYANG INDUSTRY CO.,LTD | 6-FM-12 | DC12V 12Ah | IEC62321-4 IEC62321-5 | CE TMC201218111-C |
| 8.0 Internal living wire in generator | XINGDA ELECTRONICS WIRE & CABLE CO LTD | 3321 | 600 Va.c. 150 °C 12 AWG | UL 758 | UL mark E187208 |
| (alternative) | ZHE JIANG CHENG BAO WIRE & CABLE CO LTD | 3321 | 600 Va.c. 150 °C 12 AWG | UL 758 | UL mark E315651 |
| (alternative) | QIFURUI ELECTRONICS CO., LTD | 3321 | 600 Va.c. 150 °C 12 AWG | UL 758 | UL mark E211048 |
| 9.0 Internal living wire in panel | Echu Special Wire & Cable (KunShan) Co., Ltd. | H07V-K | 450/750 Va.c. 4.0 $mm^2$ | EN ISO 8528-13 | Test with machine |
| (alternative) | Dongguan Yongsheng Cables Technology Co., Ltd. | H07V-K | 450/750 Va.c. 4.0 $mm^2$ | EN 50525-2-31 | VDE mark 40049138 |
| (alternative) | QIFURUI ELECTRONICS CO., LTD | H07V-K | 450/750 Va.c. 4.0 $mm^2$ | EN 50525-2-31 | VDE mark 40050652 |
| (alternative) | XINGDA ELECTRONICS WIRE & CABLE CO LTD | 1007 | 300 Va.c. 80 °C 12 AWG | UL 758 | UL mark E187208 |
| (alternative) | ZHE JIANG CHENG BAO WIRE & CABLE CO LTD | 1007 | 300 Va.c. 80 °C 12 AWG | UL 758 | UL mark E315651 |
| (alternative) | QIFURUI ELECTRONICS CO., LTD | 1007 | 300 Va.c. 80 °C 12 AWG | UL 758 | UL mark E211048 |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|

**Attachment table: Critical Components**

| **EYG9000G, EYG9000GE** | | | | | |
|---|---|---|---|---|---|
| **Object/ part No.** | **Manufacturer/ trademark** | **Type/ model** | **Technical data** | **Standard** | **Mark(s) of conformity** |
| 1.0 Engine | Zhejiang Leiya Electronics Co., Ltd. | LY192F2 | Power: 9.0kW/3000min$^{-1}$<br>Displacement: 458 cm$^3$ | EN ISO 8528-13 | Test with machine |
| 2.0 Generator | Zhejiang Leiya Electronics Co., Ltd. | Copper Class F | Main winding: 0.358Ω<br>Aux. winding: 1.387Ω<br>DC winding: 0.106Ω<br>(25 ℃) | EN ISO 8528-13 | Test with machine |
| 3.0 Socket Outlet | Zhejiang Kaibao Electrical Equipment | XB-220S | AC 250V 16A IP54 | DIN VDE 0620-1 | TUV mark B150357729 008 |
| (alternative) | Zhejiang Kaibao Electrical Equipment | PQ-226S | AC 250V 16A IP44 | DIN VDE 0620-1 | TUV mark B150357729 008 |
| (alternative) | Zhangjiaggang UCHEN New Energy Technology Co., Ltd. | B-013 | AC 250V 16A IP44 | DIN VDE 0620-1 | TUV mark J50402209 |
| (alternative) | Zhejiang Suoben Electric Co., Ltd. | 02021602 | AC 250V 16A IP44 | DIN VDE 0620-1 | TUV mark J50448437 |
| (alternative) | Zhejiang Suoben Electric Co., Ltd. | 05021601 | AC 250V 16A IP44 | NF C 61-314 | TUV mark R50442225 |
| (alternative) | Zhejiang Suoben Electric Co., Ltd. | 05031302 | AC 250V 13A IP44 | BS 1363-2 | TUV mark R50450825 |
| 4.1 Circuit breaker for AC output | Zhejiang BSB Electrical Appliances Co., Ltd. | BSB1-30 | AC230V 50/60Hz 30.4A | EN IEC 60934 | TUV mark R50129667 |
| 4.2 Circuit breaker for socket outlet | Wokema Electric (Zhejiang) Co., Ltd. | W55-x | AC125/250V; 50/60Hz<br>DC50V<br>16A | EN 60934 | TUV mark R50239241 |
| (alternative) | Topstone Corp. | L2 | AC125/250V; 50/60Hz<br>DC50V<br>16A | EN 60934 | TUV mark R50046704 |
| (alternative) | Kuoyuh W.L. Enterprise Co. Ltd. | 91 series | AC125/250V; 50/60Hz<br>DC50V<br>16A | EN 60934 | TUV mark B160658611 008 |
| 5.0 Circuit breaker for DC output | Wokema Electric (Zhejiang) Co., Ltd. | W55-x | AC125/250V; 50/60Hz<br>DC50V<br>10A | EN 60934 | TUV mark R50239241 |
| (alternative) | Topstone Corp. | L2 | AC125/250V; 50/60Hz<br>DC50V<br>10A | EN 60934 | TUV mark R50046704 |
| (alternative) | Kuoyuh W.L. Enterprise Co. Ltd. | 91 series | AC125/250V; 50/60Hz<br>DC50V<br>10A | EN 60934 | TUV mark B160658611 008 |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|

**Attachment table: Critical Components**

| **EYG9000G, EYG9000GE** | | | | | |
|---|---|---|---|---|---|
| **Object/ part No.** | **Manufacturer/ trademark** | **Type/ model** | **Technical data** | **Standard** | **Mark(s) of conformity** |
| 6.0 Voltmeter | Fuding Santai Electric Co., Ltd. | 91L4 | 0~300 V with metal guard | EN ISO 8528-13 | Test with machine |
| 7.0 Battery for electrical starting | SICHUAN LIYANG INDUSTRY CO.,LTD | 6-FM-12 | DC12V 12Ah | IEC62321-4 IEC62321-5 | CE TMC201218111-C |
| 8.0 Internal living wire in generator | XINGDA ELECTRONICS WIRE & CABLE CO LTD | 3321 | 600 Va.c. 150 °C 10 AWG | UL 758 | UL mark E187208 |
| (alternative) | ZHE JIANG CHENG BAO WIRE & CABLE CO LTD | 3321 | 600 Va.c. 150 °C 10 AWG | UL 758 | UL mark E315651 |
| (alternative) | QIFURUI ELECTRONICS CO., LTD | 3321 | 600 Va.c. 150 °C 10 AWG | UL 758 | UL mark E211048 |
| 9.0 Internal living wire in panel | Echu Special Wire & Cable (KunShan) Co., Ltd. | H07V-K | 450/750 Va.c. 6.0 $mm^2$ | EN ISO 8528-13 | Test with machine |
| (alternative) | Dongguan Yongsheng Cables Technology Co., Ltd. | H07V-K | 450/750 Va.c. 6.0 $mm^2$ | EN 50525-2-31 | VDE mark 40049138 |
| (alternative) | QIFURUI ELECTRONICS CO., LTD | H07V-K | 450/750 Va.c. 6.0 $mm^2$ | EN 50525-2-31 | VDE mark 40050652 |
| (alternative) | XINGDA ELECTRONICS WIRE & CABLE CO LTD | 1007 | 300 Va.c. 80 °C 10 AWG | UL 758 | UL mark E187208 |
| (alternative) | ZHE JIANG CHENG BAO WIRE & CABLE CO LTD | 1007 | 300 Va.c. 80 °C 10 AWG | UL 758 | UL mark E315651 |
| (alternative) | QIFURUI ELECTRONICS CO., LTD | 1007 | 300 Va.c. 80 °C 10 AWG | UL 758 | UL mark E211048 |

**End of Test Report**