C.2 Power Generating Module Document Type C and Type D

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| **Form C2-1 Power Generating Module Document for Type C and Type D Power Generating Modules**  **Compliance Statement**  This document shall be completed by the **Generator**.  Note: For phased installations reference to **PGM** in this form should be read as reference to **Generating Unit**sand theproject phase noted. | | | | | | |
| **Power Generating Module (PGM)**  **PGM Name:**  **Compliance Contact** (name/tel/email)**:** | | | | **Distribution Network Operator (DNO)**:  **DNO Name**: ABC electricity distribution  **Compliance Contact** (name/tel/email): | | |
| **Key to Submission Stage**  **A – Application:** Submission of the Standard Application Form.  For **Type C: IS – Initial Submission:** The programme of initial compliance document submission to be agreed between the **Generator** and the **DNO** as soon as possible after acceptance of a Connection Offer. The **Power Generating Module Document** shall be completed as agreed in accordance with paragraph 18.2.2 at least 28 days before the **Generator** synchronising the **Power Generating Module** for the first time.  **E – Energisation:** Documentation required prior to Energisation.  For **Type D: ION** – **Interim Operational Notification:** The programme of initial compliance document submission to be agreed between the **Generator** and the **DNO** as soon as possible after acceptance of a Connection Offer. The **Power Generating Module Document** shall be completed as agreed in accordance with paragraph 19.3.2 at least 28 days before the **Generator** synchronising the **Power Generating Module** for the first time.  **FONS – Final Operational Notification Submission:** The **Generator** shall submit post energisation verification test documents within 28 days of synchronising in accordance with paragraph 18.4.2 or 19.5.4 to obtain **Final Operational Notification** from the **DNO**. | | | | | | |
| **Key to evidence requested**  S - Indicates that **DNO** would expect to see the results of a Simulation study  P - **Generating Unit** design data  MI - **Manufacturer** Information, generic data or test results as appropriate  D - Copies of correspondence or other documents confirming that a requirement has been met  T - Indicates that **DNO** would expect to see results of, and/or witness, tests or monitoring which demonstrates compliance  TV - Indicates Type Test reports (if **Generator** pursues this compliance option)  Note that where multiple types of evidence are indicated in the “compliance” column in the **Power Generating Module Document**, this indicates that the evidence could be provided in a number of different formats, as determined by the **Generator** and/or **Manufacturer**. | | | | **Key to Compliance**  Y = Yes (Compliant),  O = Outstanding (outstanding submission)  UR= Unresolved issue  N = No (Non-Compliant)  E = Exempt | | |
| Note that the second part of this form is split into two Parts: Part 1 is applicable to **Synchronous Power Generating Module**s and Part 2 is applicable to **Power Park Module**s. | | | | | | |
| Issue | Date of Issue | Compliance Declaration Signatory Name | Compliance Declaration Signature | | Issue Notes (completed by the **Generator**) | **DNO** review date and comment |
| Issue # | DD/MM/YY |  | I declare that the details provided in this issue of this **Power Generating Module Document** comply with the requirements of G99 | | Insert brief description of amendment | **DNO** comments on evidence provided and any outstanding issues |
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| Final Issue Prior to **FON** |  |  |  | |  |  |
| **Details of Power Generating Module** | | | | | | |
| Connection Voltage | |  | | | | |
| **Registered Capacity** | |  | | | | |
| **Manufacturer** / Reference | |  | | | | |
| Technology Type | |  | | | | |

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| **Form C2-1 Part 1 - Compliance Requirements for Synchronous Power Generating Modules** | | | | **Response** | |
| **G99 Reference** | **Compliance Requirement of the Power Generating Module** | **Submission Stage** | **Evidence Requested (and / or)** | **Compliance**  **Y, O, UR, N, E** | **Generator’s Statement**  *(Provide document references with any additional comments)* |
| 18.2.1, 18.2.3, 18.4.1 | Confirmation that a completed Standard Application Form has been submitted to the **DNO** | A, IS, ION, FONS | P, MI, D |  |  |
| 14.3 | Site Responsibility Schedule | E | D |  |  |
| 9.4.2 | **Power Quality – Voltage fluctuations and Flicker**:  The installation shall be designed in accordance with EREC P28 | IS, ION | MI, D, TV, S |  |  |
| 9.4.3 | **Power Quality – Harmonics**:  The installation shall be designed in accordance with EREC G5 | IS, ION | MI, D, TV, S |  |  |
| 13.5 | **Reactive Power capability** Confirm compliance with Section 13.5 by carrying out simulation study in accordance with C.7.3 and by submission of a report | IS, ION | S, MI |  |  |
| 13.2 | Confirm that the plant and apparatus is capable of continue to operate in the frequency ranges specified in 13.2.1 and to withstand the rate of change of frequency specified in 13.2.2 | IS | MI, TV |  |  |
| 13.2.4 | **Limited Frequency Sensitive Mode – Over frequency and Frequency Sensitive Mode** Confirm compliance with 13.2.4 by carrying out simulation study in accordance with C.7.6 and by submission of a report. | IS, ION | S, MI, TV |  |  |
| 13.2.5 | **Limited Frequency Sensitive Mode – Under frequency** Confirm compliance with 13.2.5 by carrying out simulation study in accordance with C.7.7 and by submission of a report. | IS. ION | S, MI, TV |  |  |
| C.10 | Confirm compliance with minimum frequency response requirements in Annex C.10 by testing in accordance with C.10.4. | IS, ION | MI, TV, T |  |  |
| 13.1.3 | Confirm the **Active Power** set point can be adjusted in accordance with instructions issued by the **DNO** | IS, ION | MI, TV |  |  |
| 9.1.7 | Confirm that the **Power Generating Module** has been designed to comply with cyber security requirements, as detailed in 9.1.7 | IS, ION | MI, D |  |  |
| 13.3 | **Fault Ride Through** Confirm compliance with 13.3 by carrying out simulation study in accordance with C.7.5 and by submission of a report. | IS, ION | S, MI, TV |  |  |
| 18.2.3 (e) | Confirm a detailed schedule of tests and test procedures have been provided. | IS, ION | D |  |  |
| Section 10 and Form C2-2 | **Interface Protection:**  Over and under voltage protection  Over and Under Frequency protection  Loss of mains protection  Other protection:  Details of any special protection, eg Pole Slipping or islanding  As an alternative to demonstrating protection compliance with Section 10 using **Manufacturers’ Information** or type test reports, site tests can be undertaken at the time of commissioning the **Power Generating Module** | IS, ION, FONS | MI, TV, T |  |  |
| C.7.8 | **Model validation**  Demonstration of the frequency control or governor/load controller/plant model, **Excitation System** and voltage controller by carrying out simulation studies in accordance with C.7.8 | FONS | S, MI, TV |  |  |
| C.4 | **Excitation System Open Circuit Step Response Tests** Confirm the performance requirements of a continuously acting voltage control system compliant with C.4 by testing in accordance with C.8.2 | FONS | T, MI, TV |  |  |
| C.4 | **Open & Short Circuit Saturation Characteristics** Confirm the performance requirements of a continuously acting voltage control system compliant with C.4 by testing in accordance with C.8.3 | FONS | T, MI, TV |  |  |
| 13.4.3 | **Excitation System On-Load Tests** Confirm the operation of the **Excitation System** on load is compliant with paragraph 13.4.3 and Annex C.4 by testing in accordance with C.8.4 | FONS | T, MI, TV |  |  |
| 13.5 | **Reactive Capability Test** Confirm the **Reactive Power** capability of the **Synchronous Power Generating Module** to meet the requirements of Section 13.5 by testing in accordance with C.8.5 | FONS | T, MI, TV |  |  |
| 13.2 | **Frequency Response Tests**  Confirm the **Synchronous Power Generating Module** meets the requirements of 13.2 by testing in accordance with C.8.6 | FONS | T, MI, TV |  |  |
| 13.2.3 | **Output Power with falling frequency** Confirm the **Synchronous Power Generating Module** meets the requirements of 13.2.3 by testing in accordance with C.8.7 | FONS | T, MI, TV |  |  |
| 10.3.3 | **Automatic reconnection** Confirm by testing that the reconnection sequence starts after a minimum delay of 20 s for restoration of voltage and frequency in accordance with paragraph 10.3.3 and 10.3.4 | FONS | T, MI, TV |  |  |
| 13.7.2 | Where rapid re-synchronisation is required, confirm capability to supply houseload operation, as per 13.7.2 | FONS | T, MI, TV |  |  |
| C.6 | Confirm that the dynamic system monitoring, fault recording and power quality monitoring equipment is provided, installed and functioning in accordance with Annex C.6 | ION, FONS | MI, TV, T |  |  |
| C.3 | Installation and Commissioning Form C3 completed with signed acceptance from the **DNO** representative | ION, FONS | D |  |  |

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| **Form C2-1 Part 2 - Compliance Requirements for Power Park Module** | | | | **Response** | |
| **G99 Reference** | **Compliance Requirement of the Power Generating Module** | **Submission Stage** | **Evidence Requested (and / or)** | **Compliance**  **Y, O, UR, N,** | **Generator’s Statement**  *(Provide document references with any additional comments)* |
| 18.2.1, 18.2.3, 18.4.1 | Confirmation that a completed Standard Application Form has been submitted to the **DNO** | A, IS, FONS | P, MI, D |  |  |
| 14.3 | Site Responsibility Schedule | E | D |  |  |
| 9.4.2 | **Power Quality – Voltage fluctuations and Flicker**:  The installation shall be designed in accordance with EREC P28 | IS, ION | MI, D, TV, S |  |  |
| 9.4.3 | **Power Quality – Harmonics**:  The installation shall be designed in accordance with EREC G5 | IS, ION | MI, D, TV, S |  |  |
| 13.5 | **Reactive Power capability** Confirm compliance with Section 13.5 by carrying out simulation study in accordance with C.7.3 and by submission of a report | IS, ION | S, MI |  |  |
| 13.4 | **Voltage Control and Reactive Power Stability** Confirm compliance with Section 13.4 by carrying out simulation study in accordance with C.7.4 and by submission of a report | IS, ION | S, MI |  |  |
| 13.2 | Confirm that the plant and apparatus is capable of continuing to operate in the frequency ranges specified in 13.2.1 and to withstand the rate of change of frequency specified in 13.2.2 | IS | MI, TV |  |  |
| 13.2.4 | **Limited Frequency Sensitive Mode – Over frequency and Frequency Sensitive Mode** Confirm the compliance with 13.2.4 by carrying out simulation study in accordance with C.7.6 and by submission of a report | IS, ION | S, MI, TV |  |  |
| 13.2.5 | **Limited Frequency Sensitive Mode – Under frequency** Confirm the compliance with 13.2.5 by carrying out simulation study in accordance with C.7.7 and by submission of a report | IS, ION | S, MI, TV |  |  |
| C.10 | Confirm compliance with minimum frequency response requirements in Annex C.10 by testing in accordance with C.10.4. | IS, ION, FONS | MI, TV, T |  |  |
| 13.1.3 | Confirm the **Active Power** set point can be adjusted in accordance with instructions issued by the **DNO** | IS, ION | MI, TV |  |  |
| 9.1.7 | Confirm that the **Power Generating Module** has been designed to comply with cyber security requirements, as detailed in 9.1.7 | IS, ION | MI, D |  |  |
| 13.3 and 13.6 | **Fault Ride Through and Fast Fault Current Injection** Confirm the compliance with 13.3 and 13.6 by carrying out simulation study in accordance with C.7.5 and by submission of a report | IS, ION | S, MI, TV |  |  |
| 18.2.3 (e) | Confirm a detailed schedule of tests and test procedures have been provided | IS, ION | D |  |  |
| Section 10 and Form C2-2 | **Interface Protection:**  Over and under voltage protection  Over and Under Frequency protection  Loss of mains protection  Other protection:  Details of any special protection, eg Pole Slipping or islanding  As an alternative to demonstrating protection compliance with Section 10 using **Manufacturers’ Information** or type test reports, site tests can be undertaken at the time of commissioning the **Power Generating Module** | IS, ION, FONS | MI, TV, T |  |  |
| C.7.8 | **Model validation**  Demonstration of the frequency control or governor/load controller/plant model, **Excitation System** and voltage controller by carrying out simulation studies in accordance with C.7.8 | FONS | S, MI, TV |  |  |
| C.5 | **Voltage Control Test (pre 20%)** Confirm the performance requirements of a continuously acting voltage control system compliant with C.5 by testing in accordance with C.9.2 | ION, FONS | T, MI, TV |  |  |
| C.5 | **Voltage Control Test** Confirm the performance requirements of a continuously acting voltage control system compliant with C.5 by testing in accordance with C.9.4 | FONS | T, MI, TV |  |  |
| 13.5 | **Reactive Capability Test** Confirm the **Reactive Power** capability of the **Power Park Module** meet the requirements of Section 13.5 by testing in accordance with C.9.3 | FONS | T, MI, TV |  |  |
| C.9.5 | **Frequency Response Test**  Confirm the **Generator** meets the requirements of 13.2 by testing in accordance with C.9.5 | FONS | T, MI, TV |  |  |
| 10.3.3 | **Automatic reconnection** Confirm by testing that the reconnection sequence starts after a minimum delay of 20 s for restoration of voltage and frequency in accordance with paragraph 10.3.3 and 10.3.4 | FONS | T, MI, TV |  |  |
| 13.7.2 | Where rapid re-synchronisation is required, confirm capability to supply houseload operation, as per 13.7.2 | FONS | T, MI, TV |  |  |
| C.6 | Confirm that the dynamic system monitoring, fault recording and power quality monitoring equipment is provided, installed and functioning in accordance with Annex C.6 | ION, FONS | MI, TV, T |  |  |
| C.3 | Installation and Commissioning Form C3 completed with signed acceptance from the **DNO** representative | ION, FONS | D |  |  |