

Distribution Code Consultation DCRP/18/02

Title: Requirements for all Generators – Distribution Code Amendments and EREC G98 and G99

Target Audience: All current and prospective manufacturers, developers, owners and operators of generation (and storage) of any size connecting to distribution networks.

Date Published: 11 January 2018

Deadline for responses: 01 February 2018

Summary:

This Distribution Code public consultation is seeking the views from stakeholders on the proposed modifications to the Distribution Code¹ and the publication of EREC G98 and EREC G99 which together implement the EU Network Code Requirements for Generators (RfG). EREC G98 and G99 are completely new documents. They will become Annex 1 documents in the Distribution Code and therefore subject to Authority (Ofgem) approval before final publication.

1 Introduction

The Grid and Distribution Code Review Panels have been running areas of joint work implementing the EU Network Codes, with the current focus on the RfG. The work has been split between three joint workgroups (WG), GC0100, GC0101 and GC0102. However all the relevant implications for distribution network stakeholders come together in the GC0102 proposals where the implementation in both the Grid and Distribution Codes has been developed.

Guidance from BEIS and Ofgem has been to apply the new EU requirements within the existing GB regulatory frameworks. This will provide accessibility and familiarity to GB parties, as well as putting in place a robust governance route to apply the new requirements in a transparent and proportionate way.

All the work to date and previous consultation material can be found at this link:

<https://www.nationalgrid.com/uk/electricity/codes/grid-code/modifications/eu-connection-codes-gb-implementation-mod-3>

The Panels have consulted jointly on developments in all three WGs progressively throughout 2017. This current consultation is being run jointly but in parallel with consultation material for the Distribution Code and its associated documents (EREC G98 and EREC G99) separate from the consultation material for the Grid Code. Formally the DNOs will have to recommend the final Distribution Code etc changes to Ofgem separately from National Grid recommending the Grid Changes.

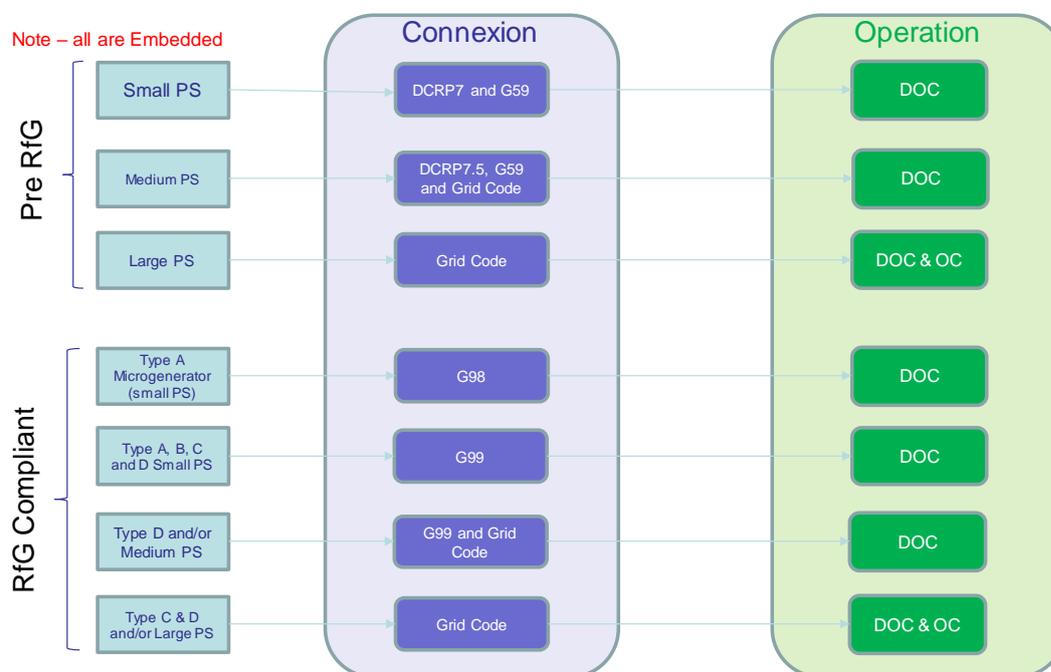
¹ <http://www.dcode.org.uk/>

This current consultation paper does not revisit the development of the parameters etc that are to be adopted in Great Britain that were the subject of the previous joint consultations. The link above gives access to all the relevant detail.

2 Analysis and Proposal

2.1 Arrangements for Existing and New Generators

New generating plant that is required to be RfG compliant will be directed by the Distribution Code to either G98 (for Type-Tested Type A power generating modules) and G99 (for all other power generating modules) for their connexion compliance requirements. Existing power generating modules will continue to be bound by G83 and G59 for their connexion compliance requirements. All power generating modules, existing and new, will need to comply with the Distribution Operating Codes in the Distribution Codes in terms of ongoing system management requirements. The relationship is shown in the following diagram



2.2 Development of Proposals

A GC0102 consultation on the development of the proposals for the Distribution Code and for ERECs G98 and G99 was undertaken from 19 October 2017 to 9 November 2017. The DNOs have also held workshops with stakeholders on the content of G98 and G99 on 6 and 10 October, 6, 7, 23, 24 November and on 4 and 5 January 2018.

Feedback from the formal consultation in October and the workshops has been used to develop the drafts of the Distribution Code and ERECs G98 and G99 for this consultation.

2.2.1 The Distribution Code

The principle changes to the Distribution Code are to harmonize certain key definitions with the RfG and with G99 – particularly the use of Power Generating Module, Generating Unit and Power Generating Facility. The terms Small Power Station and Large Power Station have been removed, although the term Medium Power Station has been retained to facilitate appropriate interaction with the Licence Exempt Embedded Medium Power Station requirements in the Grid Code.

DPC7 has been substantially modified. Text in DPC7 that overlaps with text in G59 has been deleted and new text in DPC7 applies the technical requirements of either G59 and DPC7 for existing generation commissioned before 17 May 2019 or G99 requirements only (ie not DPC7) for generation commissioned on or after 17 May 2019. A similar arrangement has been made for G83 and G98.

A small number of changes have been made to DOC 5 in relation to the ongoing compliance testing requirements in the RfG.

The Distribution Data Registration Code has been updated to include frequency parameters for Limited Frequency Sensitive Mode (LFSM) as required by the RfG. This information is also now to be collected on the revised common generation application form.

Guidance Note 2 relating to the application of G59 and G83 has been updated to recognize the existence of G98 and G99.

2.2.2 EREC G98

G99 has been written to be as close to G83 as possible, but incorporating the RfG requirements, and also basing the requirements on BS EN 50438. It is likely that BS EN 50438 will be superseded by EN 50549 in the near future, in which case G98 will need to be updated.

The principle effects of the RfG are to require LFSM, to ensure that the compliance verification information is all contained in an Installation Document, and to make allowance for Equipment Certificates to demonstrate compliance. There is no Equipment Certificate regime in place, but the existing type testing regime will continue whereby manufacturers' information can continue to be used to demonstrate compliance.

Comments received so far on G98 have been largely confined to editorial issues.

2.2.3 EREC G99

DNOs have an ambition to use EN 50549 as far as possible to replace GB specific documentation. However a published and RfG compliant EN 50549 is likely to be two or three years away. So G99 has been written to apply the requirements of G59, modified to include RfG requirements, and also to extend the concept of type testing above the current G59 limit of 50kW. Recognizing the likely emergence of Equipment Certificates, there is no upper limit to the use of type tested products, and accommodation has been made for the assembly of type tested products into complete Power Generating Modules.

Key drafting points from stakeholder feedback are:

- (a) G99 covers the increasing requirements of Type A generation modules through to Type D generation modules – and does so in separate chapters for each Type, for both technical requirements and compliance requirements.
- (b) LFSM and fault ride through (FRT) have been included in G98 and G99 (in sections 11, 12 and 13) and are identical, as far as appropriate, to the requirements being drafted into the Grid Code.
- (c) Examples of the combination of generating units of different technologies, both existing and new have been included in section 6.1.5. Understanding what G99 applies to and what G59 applies to, and how generating units should be combined into Power Generating Modules for compliance is a key issue that needs clarity.
- (d) The requirements for reconnection after planned or inadvertent disconnection remain the same as currently – see section 10.3.3 and 10.3.4.

- (e) The new RfG operational metering requirements for new Power Generating Modules of Type B and above will generally be met by DNOs own telemetry. All types will need to fit appropriate control ports to enable the DNO to issue instructions relating to active power output. Type C and D Power Generating Modules will need to fit dynamic system monitoring equipment. These are all new requirements, and the drafting in G99 is trying to balance current and future needs with cost. Drafting for these points can be found in sections 11.1.4, 12.1.3, 12.7, 13.1.3, 13.9 and Annex C.3.
- (f) There are new requirements for Type B, C and D Power Generating Modules to submit simulation studies- see Annexes B5 and C7. Again as far as possible these requirements have been made identical to those for the same Types in the Grid Code.
- (g) Stakeholders seem to agree that there is no case to allow for non-type tested generation of less than 16A per phase. Hence all such generation, and also that Power Generating Modules of <800W, will be dealt with exclusively in G98.
- (h) Requirements for assembling type tested components into a type tested Power Generating Module have been laid out in section 15. These do not obviate the need for checks on site to prove functionality, but they are designed to minimise the need for complex site testing as part of the compliance assessment process.

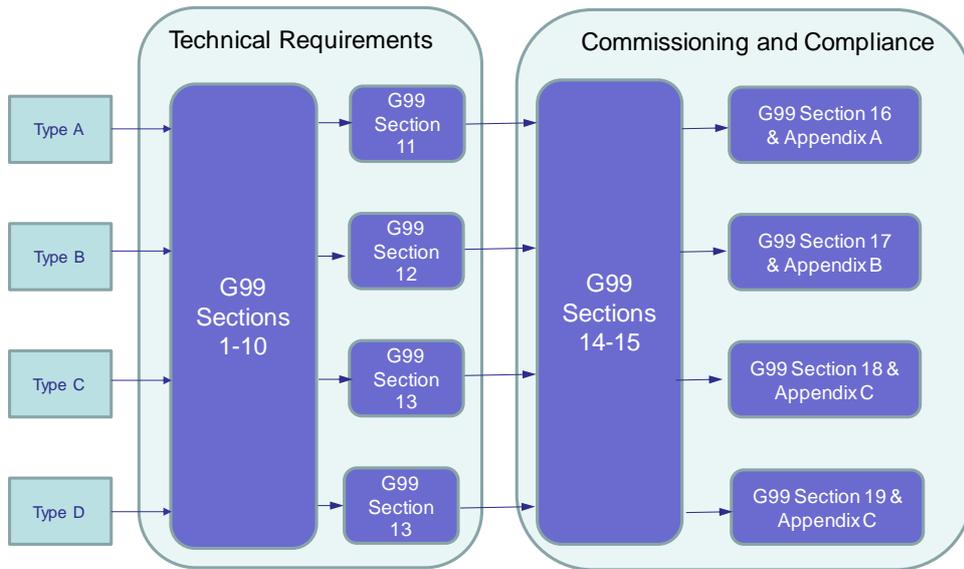
The stakeholder feedback from the workshops resulted in a re-ordering of the content of Annex C, and which is now reflected in the current drafting. DNOs would still welcome stakeholder comments on this aspect, and ideally as soon as possible to enable a continuing dialogue.

Although not part of G99, the consultation pack includes the updated common application form that DNOs expect Generators to use in supplying the required data etc as part of the connexion process. Please do not comment on the format of this as it is anticipated that this will be redesigned and might well be the basis for on-line web forms etc. However we would welcome comments on the content.

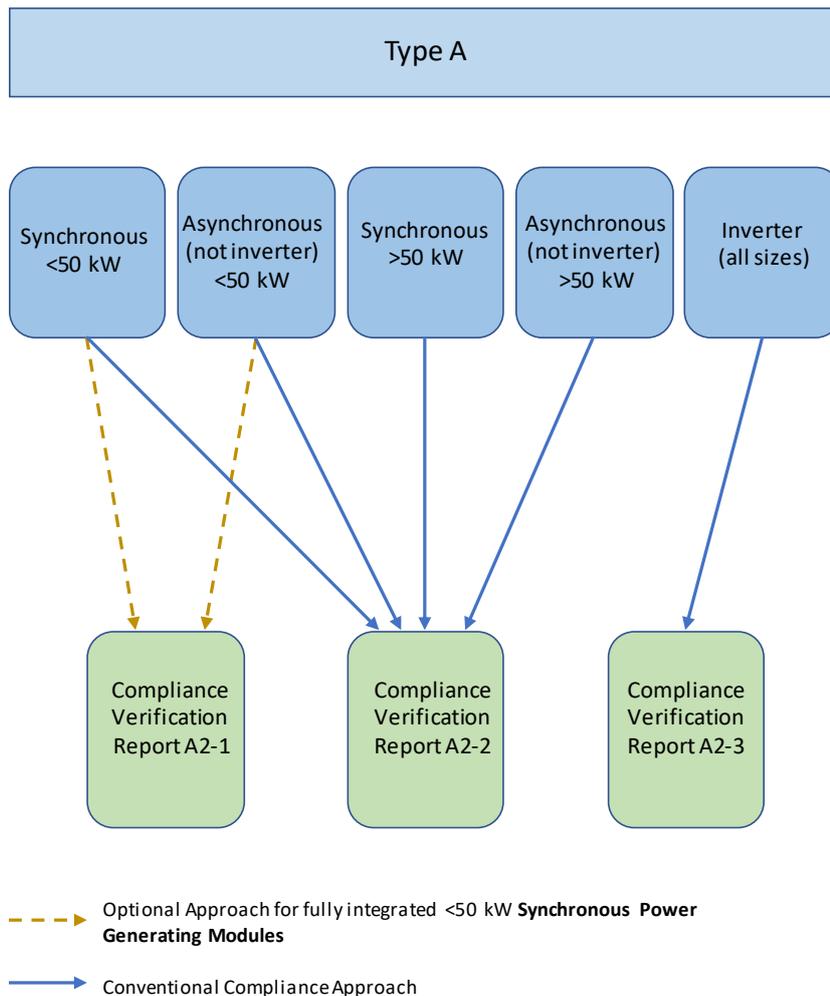
2.3 EREC G99 Compliance Requirements

G99 has been written to extend the philosophy of type testing as far as possible above the current 50kW limit. In doing so it has to cope with smaller Type A modules in the sub 50kW range (ie as existing) and up to much larger components, possibly used to form Type B, C or D modules. The development of these approaches has benefitted from significant stakeholder feedback during and between the workshops mentioned above.

The overall structure of G99 has been created to deal with the specifics of technical requirements and of compliance within discrete sections for each Type of module, as per the diagram below.



Recognizing the historic approach, and also how the approach to commissioning and type testing various technologies needs to recognize their differences, the following diagram explains the commissioning and testing route for Type A generation.



In the diagram above A2-1, A2-2 and A2-3 refer to three separate compliance forms contained within Annex A of G99 and the Generator or Manufacturer is free to choose the most appropriate route for the particular module in question.

The development of the compliance assessment processes in G99 have tried to take and extend the existing G59 approaches and also to be as close to the equivalent Grid Code requirements for identical sized equipment, ie of the same Type.

For each type, the forms in the Annexes are designed to guide Generator through the connexion process and also to act as the Installation Document for Type A (Annex A3) and supporting compliance information (Annex A2), and the Power Generating Module Document for Types B and C (Annex B2, and Annex C2 and their supporting forms). Type D requires the EON, ION, FON process and this is covered in section 19 (and also uses the C2 forms).

As mentioned in 2.2 above the DNOs held a useful workshop with stakeholders on 4 and 5 January whereby the use of all the suggested forms was trialled with stakeholders. As a result of those workshops it was agreed that the presentational order has been modified version in the consultation version of G99 – although further dialogue with stakeholders would still be welcome. These are not changes of requirement or detail, but improvements to the readability of G99 and the practicalities of using it. The DNOs will review these structural suggestions, in continuing dialogue with stakeholders, in parallel with the consultation on the content of G99.

2.4 Other Relevant Issues

The baseline text for G98 and G99 is the current approved G83 and G59 respectively. Both these documents are also under review by working group DC0079 who are reviewing the loss of mains protection and rate of change of frequency protection requirements for all generation connected to distribution networks. It is likely that during the period of consultation of this consultation paper, the DC0079 WG will also propose changes to loss of mains, rate of change of frequency and vector shift protection that will affect the detailed drafting of G83 and G99.

Many stakeholders are familiar with both areas of work, and will appreciate that there is little practical interaction between the two. Assuming that the DC0079 proposals for revised loss of mains protection are accepted, these will form a consequential change to the text of G98 and G99 to reflect the changes to be made to G83 and G59.

3 Applicable Distribution Code Objectives

Impact of the modification on the Applicable Distribution Code Objectives:	
Relevant Objectives	Identified impact
To permit the development, maintenance and operation of an efficient, coordinated and economical system for the distribution of electricity	Neutral
To facilitate competition in the generation and supply of electricity	Neutral
To efficiently discharge the obligations imposed upon distribution licensees by the distribution licences and comply with the Regulation and any relevant legally binding decision of the European Commission and/or the Agency for the Co-operation of Energy Regulators;	Positive

To promote efficiency in the implementation and administration of the Distribution Code	Neutral
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4 Consultation Questions

- i. Comments are welcome on any part of the draft Distribution Code, G98 and G99. Please comment in the manner that is most convenient to you. Specific word templates are available in the consultation pack for making detailed drafting comments on, but please do not feel constrained to use them.
- ii. Do you have any general comments on how effectively the RfG requirements have been incorporated into GB documents and is there any aspect that needs modifying before final publication?
- iii. Are there any comments on the G99 drafting points that are listed in section 2.3.3 above?
- iv. Do you have any comments on the draft common application form included in the consultation pack, or on the envisaged connexion and compliance assessment process?
- v. Please indicate (ASAP, ie before the closing date of 01/02/18 if possible) if you have any views relating to the logic or re-ordering etc of the forms in G99's annexes.
- vi. Guidance Note 3 in the Distribution Code relating to Stirling engines had expired. It is proposed to extend this now until the RfG is effective from 18/05/19.

5 Next Steps

Responses to this consultation should be sent to the Distribution Code Review Panel Secretary at dcode@energynetworks.org by **17:00 01 February 2018** on the pro-forma provided expressly for the purpose, or via any other convenient means. Given the very tight timescale to progress this modification, responses after this date may not be considered.

6 Consultation Pack

Consultation pack can be found [here](#).

For more information, please contact:

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