ISSUE 3.5

**MICROGENERATION INSTALLATION STANDARD: MIS 3002**

# Requirements for MCS Contractors Undertaking the Supply, Design, Installation, Set to Work Commissioning and Handover of Solar Photovoltaic (PV) Microgeneration Systems

This Standard has been approved by the Standards Management Group of the MCS.

This Standard was prepared by the MCS Working Group 2 'Solar Photovoltaic Systems'.

## REVISION OF MICROGENERATION INSTALLATION STANDARDS

Microgeneration Installation Standards will be revised by issue of revised editions or amendments. Details will be posted on the website at www.mcscertified.com

Technical or other changes which affect the requirements for the approval or certification of the product or service will result in a new issue. Minor or administrative changes (e.g. corrections of spelling and typographical errors, changes to address and copyright details, the addition of notes for clarification etc.) may be made as amendments.

The issue number will be given in decimal format with the integer part giving the issue number and the fractional part giving the number of amendments (e.g. Issue 3.2 indicates that the document is at Issue 3 with 2 amendments).

Users of this Standard should ensure that they possess the latest issue and all amendments.

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# FOREWORD

The following document contains provisions, which, through reference in this text, constitute normative or informative provisions of this document MIS 3002. At the time of publication, the editions indicated were valid. All documents are subject to revision, and parties applying this document MIS 3002 are encouraged to investigate the possibility of applying the most recent editions of the documents referenced.

The following document MIS 3002 Issue 3.4 is a minor update to MIS 3002 Issue 3.3. It is available for reference from the date of publication (09/11/2018). MCS Contractors of microgeneration systems who are certificated in accordance with MIS 3002 may commence working in accordance with this update from the date of publication (09/11/2018). MCS Contractors of microgeneration systems who are certificated in accordance with MIS 3002 shall commence working in accordance with this update from the date of implementation (12/03/2019).

*Note for information only: The eligibility criteria for the Feed in Tariff (FIT) are due to be updated to refer to MIS 3002 Issue 3.4. However, this update has not yet taken effect. Accordingly, to meet the relevant FIT eligibility criteria to enable the system owner to claim the Feed in Tariff, any Solar PV systems installed and commissioned before 12/03/2019 shall be installed in accordance with Issue 3.3 of MIS 3002 and any Solar PV systems installed and commissioned on or after 12/03/2019 shall be installed in accordance with MIS 3002 Issue 3.4.*

This Standard identifies the evaluation and assessment practices to be undertaken by the certification bodies of the MCS for the purposes of approval and listing of contractors undertaking the supply, design installation, set to work, commissioning and handover of solar photovoltaic (PV) microgeneration systems. The listing and approval is based on evidence acceptable to the certification body:

- that the system or service meets the Standard
- that the contractor has staff, processes and systems in place to ensure that the system or service delivered meets the standard

And on:

- periodic audits of the contractor including testing as appropriate

- compliance with the contract for the MCS listing and approval including agreement to rectify faults as appropriate

This Standard shall be used in conjunction with the MCS 001 scheme document and any other guidance and/or supplementary material available on the MCS website specifically referring to this Microgeneration Certification Standard (MIS 3002). A catalogue of guidance and supplementary material to be read in conjunction with MIS 3002 can be found on the MCS website, www.mcscertified.com

Government defines Microgeneration as the production of heat and/or electricity on a small-scale from a low carbon source. The various technologies have the potential to help us achieve our objectives of tackling climate change, ensuring reliable energy and tackling fuel poverty.

The objective of Government's Microgeneration strategy is to create conditions under which Microgeneration becomes a realistic alternative or supplementary energy generation source for the householder, for the community and for small businesses.

*NOTES:*
*This Microgeneration Installation Standard makes use of the terms 'must', 'shall' and 'should' when prescribing certain requirements and procedures. In the context of this document:*

- *the term 'must' identifies a requirement by law at the time of publication;*
- *the term 'shall' prescribes a requirement or procedure that is intended to be complied with in full and without deviation;*
- *the term 'should' prescribes a requirement or procedure that is intended to be complied with unless reasonable justification can be given.*

*Compliance with this Microgeneration Installation Standard does not of itself confer immunity from legal obligations.*
*Users of Microgeneration Installation Standards should ensure that they possess the latest issue and all amendments.*
*The Steering Group welcomes comments of a technical or editorial nature and these should be sent to meetings@mcscertified.com*
*Listed products and services may be viewed on our website:* www.mcscertified.com

# 1. SCOPE

This standard specifies the requirements of the MCS for MCS Contractors undertaking the supply, design, installation, set to work, commissioning and handover of solar photovoltaic (PV) microgeneration systems for permanent buildings.

# 2. DEFINITIONS

| | |
|---|---|
| MCS Contractor | An individual, body corporate or body incorporate, applying for or holding MCS certification for delivery of supply, design and / or design review, installation, set to work, commissioning services and handover for systems covered by the relevant technology standard. |
| Contract | An undertaking for the design, supply, installation, set to work, commissioning and handover of systems covered by the relevant technology standard. All contracts must be written to be compliant with MCS requirements. |
| Design | The formulation of a written plan including a specific list of products and fixings to form a completed system for a defined Microgeneration technology. Including extensions and alterations to existing Microgeneration systems. |
| Installation | The activities associated with placement and fixing of a Microgeneration system. |
| Set to work | The activities necessary to make the installed equipment function as a completed system prior to commissioning. |
| Commissioning | "The advancement of an installation from the state of setting to work of an installation, the regulation of the system and the fine tuning of the static completion to full working order to the specified requirements.<br><br>Commissioning includes recording all relevant measurements, flow rates and / or test results, and includes the preparation and submission of a commissioning report or certificate as required by the relevant technology standard that shall confirm that the system is capable of delivering the performance quoted to the customer." |

| | |
|---|---|
| Subcontract | A written contract between an MCS contractor and another firm for the supply of products and services in connection with the fulfilment of a contract. |
| Handover | The point in a contract where commissioning and certification of the system have been satisfactorily completed to the contract specification so enabling the installation to be formally explained and handed over to the client. Including all relevant documentation required by the relevant technology standard. |

# 3. REQUIREMENTS FOR THE MCS CONTRACTOR

## 3.1 CAPABILITY

3.1.1 MCS Contractors shall have the capability and capacity to undertake the supply, design, installation, set to work, commissioning and handover of solar PV Microgeneration systems.

Where MCS contractors do not engage in the design or supply of solar PV systems, but work solely as a MCS Contractor for a client who has already commissioned a system design; then the MCS Contractor must be competent to review and verify that the design would meet the design requirements set out in this Standard and this should be recorded.

## 3.2 QUALITY MANAGEMENT SYSTEM

3.2.1 MCS Contractors shall operate a satisfactory quality management system which meets the additional requirements set out in the scheme document MCS 001.

## 3.3 SUBCONTRACTING

3.3.1 In installations for private customers, any work within the scope of the scheme not undertaken by employees of the MCS Contractor shall be managed through a formal subcontract agreement between the two parties in accordance with the policies and procedures employed by the MCS Contractor. These procedures shall ensure that the subcontractor undertakes the work in accordance with the requirements of this standard.

3.3.2 In other situations (for example new build, or for commercial customers), it is permissible for the physical installation, setting to work and commissioning to be undertaken by others (i.e. not subcontracted to the MCS Contractor) provided that:

3.3.3 A contract between the MCS Contractor and the commercial client details obligations on the client to include that evidence of skills and training of those employed by the client to do elements of work not undertaken by the MCS Contractor are to be made available to the MCS Contractor to ensure that the competence requirements of this standard are met and that access to the site for training and supervision in accordance with the following sections is agreed in advance.

3.3.4 The MCS Contractor provides additional product-specific training for those undertaking the work not undertaken by the MCS Contractor.

3.3.5 The MCS Contractor assesses a sample number of installations under the contract which is not less than the square root of the number of installations rounded up to the nearest whole number (e.g. a new build site of 50 installations then a minimum of 8 are assessed).

3.3.6 The MCS Contractor assumes responsibility at handover that the installation is in full compliance with the standard.

### 3.4 CONSUMER CODE OF PRACTICE

3.4.1 The MCS Contractor shall be a member of and, when dealing with domestic consumers, comply with a code of practice (consumer code), which is relevant to the scope of their business in the Microgeneration sector and which is approved by the Trading Standards Institute (or formally approved under the Office of Fair Trading (OFT) prior to April 1st 2013).

# 4. DESIGN AND INSTALLATION REQUIREMENTS

### 4.1 REGULATIONS

4.1.1 All applicable regulations and directives must be met in full. It should be noted that regulations that must be applied may be different in England and Wales, Scotland and Northern Ireland. MCS

Contractors must ensure they have a system to identify all applicable regulations and changes to them.

4.1.2 All work, and working practices, shall be in compliance with all relevant Health and Safety regulations and a risk assessment shall be conducted before any work on site is commenced.

4.1.3 All MCS Contractors shall make their customers aware of all permissions and approvals required for the installation.

4.1.4 The MCS Contractor shall assess the building using a competent professional experienced in solar photovoltaic systems to ensure that the site is suitable for the installation and that the building will meet the requirements of the Building Regulations (in particular those relating to energy efficiency) and other regulations applicable to their work during and following installation.

4.1.5 Where required, planning permission shall be obtained before work is commenced.

4.1.6 Where work is undertaken that is notifiable under the Building Regulations it shall be made clear to the customer who shall be responsible for this notification.

4.1.7 The MCS Contractor shall ensure that this notification has been completed prior to handing over the installation. Self-certification, in lieu of building control approval, is only permitted where installation and commissioning is undertaken by a person deemed competent and registered with a Competent Persons Scheme (CPS) approved by the Department for Communities and Local Government (DCLG) for the scope of work being undertaken. Further details can be found at http://www.competentperson.co.uk

4.1.8 MCS Contractors should ensure that generating plants are certified to the latest standards required by the Energy Networks Association recommendations. Refer to Clause 8 "Publications for Reference and Further Reading" for details of the changes to the Engineering Network Codes.

## 4.2 DESIGN AND INSTALLATION

4.2.1 Solar PV Microgeneration systems shall be designed and installed in accordance with the MCS/ECA publication: Guide to the Installation of Photovoltaic Systems (ISBN 978-0-9574827-0-

8– Hard Copy / ISBN 978-0-9574827-1-5– Electronic PDF) – hereafter referred to as The Guide, and paragraph 4.4 below.

4.2.2 In particular, attention is drawn to the unique combination of hazards associated with installation of PV systems highlighted in section 1.4 of the above document.

## 4.3 SYSTEM PERFORMANCE

4.3.1 An estimate of annual energy performance shall be made using the methodology detailed in section 3.7 of The Guide taking account of the actual orientation, pitch, location and over shading conditions.

4.3.2 This estimate shall be communicated with the client at or before the point that the contract is awarded and shall be accompanied by the relevant disclaimers detailed in clause 3.7 of The Guide.

4.3.3 Additional estimates may be provided using an alternative methodology, including proprietary software packages, but any such estimates must clearly describe and justify the approach taken and

4.3.4 factors used and must not be given greater prominence than the standard MCS estimate. In addition, it must be accompanied by warning stating that it should be treated with caution if it is significantly greater than the result given by the standard method.

## 4.4 COMMISSIONING

4.4.1 The solar PV system shall be commissioned according to a documented procedure to ensure that the system is safe, has been installed in accordance with the requirements of this standard and the manufacturers' requirements, and is operating correctly in accordance with the system design. See also Section 6 of The Guide.

## 4.5 DOCUMENTATION

4.5.1 MCS Contractors shall provide customers with a comprehensive document pack which, as a minimum, includes the information given in Section 7 of The Guide.

### 4.6 EQUIPMENT

4.6.1 When making installations in accordance with this standard the solar PV modules shall be listed under the MCS (http://www.mcscertified.com).

4.6.2 Equipment should be suitable for its application and have a manufacturer's declaration of conformity for the appropriate standard.

# 5. ROLES AND COMPETENCY REQUIREMENTS

5.1 All personnel employed by, or subcontracted to the MCS Contractor must be able to demonstrate that they are competent in the disciplines and skills, appropriate to the activities required for their role, in accordance with this standard.

5.2 Complete records of training (where appropriate) and competence skills of personnel must be maintained by the MCS Contractor, in particular:

- Design staff, carrying out full conceptual design, must be able to demonstrate a thorough knowledge of the technologies involved and the interaction of associated technologies.
- All personnel engaged in the actual installation are expected to have technical knowledge and installation skills, to install components and equipment within the designed system, in accordance with all appropriate codes of practice, manufacturer's specifications and regulations. As a minimum MCS Contractors should have proven current training / experience with relevant solar photovoltaic systems as shown in Appendix A.
- All personnel engaged in the final inspection, commissioning, maintenance or repair, must have a comprehensive technical knowledge of the products, interfacing services and structures to complete the specified processes.

5.3 Please see Appendix A below which contains the required roles which will need to be fulfilled by the MCS Contractor for this MIS 3002 standard.

5.4 The competence criteria to be demonstrated by the MCS Contractor can be found via the MCS website (www.mcscertified.com). In addition to this, the MCS Contractor guidance on how to

achieve compliance and the descriptions of the required roles which will need to be fulfilled can also be found on the MCS website (www.mcscertified.com).

# 6. HANDOVER REQUIREMENTS

6.1 At the point at which the solar PV system is handed over to the client, the documentation as detailed in 4.5 shall be provided and explained along with:

- The maintenance requirements and maintenance services available;
- A certificate signed by the MCS Contractor containing at least the following:
  - a statement confirming that the solar PV system meets the requirements of this standard
  - Client name and address
  - Site address (if different)
  - MCS Contractor's name, address etc.
  - List key components installed
  - Estimation of system performance calculated according to 4.3

6.2 All MCS Contractors shall be registered to MCS through the MCS Installation Database. A certificate shall be obtained from the MCS Installation Database for each installation showing that the installation has been registered with the scheme and shall be provided to the customer no later than 10 working days
after the date of commissioning the system; on provision of the certificate the customer shall be instructed to include it within the handover pack.

6.3 The generation of the certificate shall be undertaken in full compliance with the terms and conditions of use of the MCS Installation Database[1] and the registration of the system on the MCS installation database shall only be undertaken after the system has been fully installed and commissioned.

[1] The terms and conditions of use can be found on the MCS Installation Database website.

6.4 A "per installation" fee is levied on MCS Contractors for each registration added to the database. Details of any such fee will be advised from time to time through MCS Certification Bodies.

# 7. REGIONAL OFFICES

7.1 Where the firm wishes to design and commission under the Certification Scheme in regional offices, then these offices shall meet the requirements of this standard to be eligible for Certification.

# 8. PUBLICATIONS FOR REFERENCE AND FURTHER READING

8.1 The below list is provided so that MCS Contractors know which documents have been used as a basis for the development of the requirements of this MIS standard and they are able to further research topics if they need to do so.

8.2 It is not a scheme requirement for MCS Contractors to own or have immediate access to the documents referenced unless this MIS standard does not adequately cover off the aspects required.

- BRE Digest 489 Wind loads on roof-based photovoltaic systems. Available from: www.brebookshop.com
- BRE Digest 495 Mechanical installation of roof-mounted photovoltaic systems. Available from: www.brebookshop.com
- BS 7671:2018 Requirements for Electrical Installations (IET Wiring Regulations Eighteenth Edition). Available from British Standards Institution (BSI): www.bsi-global.com or The Institution of Engineering and Technology (IET): www.theiet.org/publications/

*(Note: The MCS Guide to the Installation of Photovoltaic Systems will be updated to reflect the latest version)*

- EN 10088-1:2005 Stainless steels. List of stainless steels. Available from British Standards Institution (BSI): www.bsi-global.com

- EN 12975-2:2006 Thermal solar systems and components – Solar collectors – Part 2 Test methods. Available from British Standards Institution (BSI): www.bsi-global.com
- EN ISO 14713:1999 Protection against corrosion of iron and steel structures – Zinc and aluminium coatings – Guidelines. Available from British Standards Institution (BSI): www.bsi-global.com
- G59/1 1991 ' Recommendations for the Connection of Embedded Generating Plant to the Public Electricity Suppliers' Distribution Systems'. Available from The Energy Networks Association, http://www.energynetworks.org .
- Engineering Recommendation G99 Issue 1 – Amendment 1 published 16 May 2018 - 'Requirements for the connection of generation equipment in parallel with public distribution networks on or after 27 April 2019'

*(Note: G59/1 was updated by the requirements of G59/3 in 2014. G59/3 will be replaced by the requirements of G99/1)*
*(Note: The MCS Guide to the Installation of Photovoltaic Systems will be updated to reflect the latest version)*

- G83/1 2003 ' Recommendations for the Connection of Small-scale Embedded Generators (up to 16 A per phase) in parallel with Public Low-voltage Distribution Networks'. Available from The Energy Networks Association, http://www.energynetworks.org
- Engineering Recommendation G98 Issue 1 – Amendment 1 published 16 May 2018 - 'Requirements for the connection of Fully Type Tested Micro-generators (up to and including 16 A per phase) in parallel with public Low Voltage Distribution Networks on or after 27 April 2019'

*(Note: G83/1 was updated by the requirements of G83/2 in 2012. G83/2 will be replaced by the requirements of G98/1)*
*(Note: The MCS Guide to the Installation of Photovoltaic Systems will be updated to reflect the latest version)*

- Guide to the Installation of Photovoltaic Systems (MCS/ECA publication: ISBN 978-0-9574827-0-8– Hard Copy / ISBN 978-0-9574827-1-5– Electronic PDF)

- MCS 001 - MCS - Contractors certification scheme document. Available from www.mcscertified.com

# APPENDIX A – ROLES AND COMPETENCY REQUIREMENTS

| | 3001 | 3002 | 3003 | 3004 | 3005 | 3007 | 3007-2 | 300x |
|---|---|---|---|---|---|---|---|---|
| **Roles** | **ST** | **PV** | **Wind** | **Biomass** | **Heat Pumps** | **CHP (Heat)** | **CHP (Elec)** | **Innovative Technology** |
| | | | | | | | | |
| Nominee | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ** |
| Nominated Technical Person(s) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ** |
| Health and Safety co-ordinator | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ** |
| | | | | | | | | |
| Designer(s) Full scope | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ** |
| Designer(s) Limited scope | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ** |
| | | | | | | | | |
| Electrical competencies | * | ✓ | ✓ | * | * | ✓ | ✓ | ** |
| Plumbing competencies | ✓ | × | × | ✓ | ✓ | ✓ | ✓ | ** |
| Heating competencies | * | × | × | ✓ | ✓ | ✓ | ✓ | ** |
| Refrigeration competencies | × | × | × | × | * | × | × | ** |
| | | | | | | | | |
| Specialist competencies | * | * | * | * | * | * | * | ** |

✓ Required for the technology

× Not required for the technology

* If applicable to the technology

** For further details please see the MCS Change Process and the Competence Criteria on the MCS website: (www.microgenerationcertification.org).

☐ A change of staff fulfilling this role would require notification to the Certification Body.

# AMENDMENTS SINCE PUBLICATION

| Document No. | Amendment Details | Date |
|---|---|---|
| 1.2 | Amended 3.4 Consumer Code of Practice wording<br>Updated e-mail and website addresses | 25/02/2008 |
| 1.3 | Gemserv details added as Licensee.<br>Document reformatted to reflect brand update.<br>References to BERR updated to DECC, MCS logo updated accordingly.<br>Website and email addresses updated to reflect new name. | 01/12/2008 |
| 1.4 | Quality review | 10/01/2009 |
| 1.5 | MCS Mark Updated | 25/02/2009 |
| 1.6 | Additional contacting options were added to clause 3.3. As agreed in the MCS Steering on 27/10/2009.<br>References to Clear Skies have been removed from clause 4.7 and a link to the MCS website added. | 28/01/2010 |
| 2.0 | Addition of text under section 4.4 – site specific issues, (see 4.4.6) surrounding metering requirements and also under section 6 – handover with regards to MCS Certificates and the MID, as agreed at SG Meeting of May 27th 2010. | 26/08/2010 |
| 2.1 | Update Section 6 Handover Requirements | 03/02/2012 |
| 3.0 | Significant update to all areas of the standard | 07/02/2013 |

| | | |
|---|---|---|
| 3.1 | Minor update to foreword to indicate an implementation of this standard from 07/05/2013 | 21/02/2013 |
| 3.2 | Update to Section 5 and Appendix A | 16/12/2013 |
| 3.3 | Updated definitions | 01/05/2015 |
| 3.4 | Update references to BS 7671, G59 and G83 within Clause 8.<br>Inclusion of notes within Clause 8.<br>Addition of Clause 4.1.8 on the requirements of the Energy Networks Association. | 09/11/2018 |
| 3.5 | Gemserv details removed. Rebranding of document, update of email and website addresses and cosmetic changes. | 10/07/2019 |