A Support Tool for Renewable Energy Installers Considering Membership of the Microgeneration Certification Scheme

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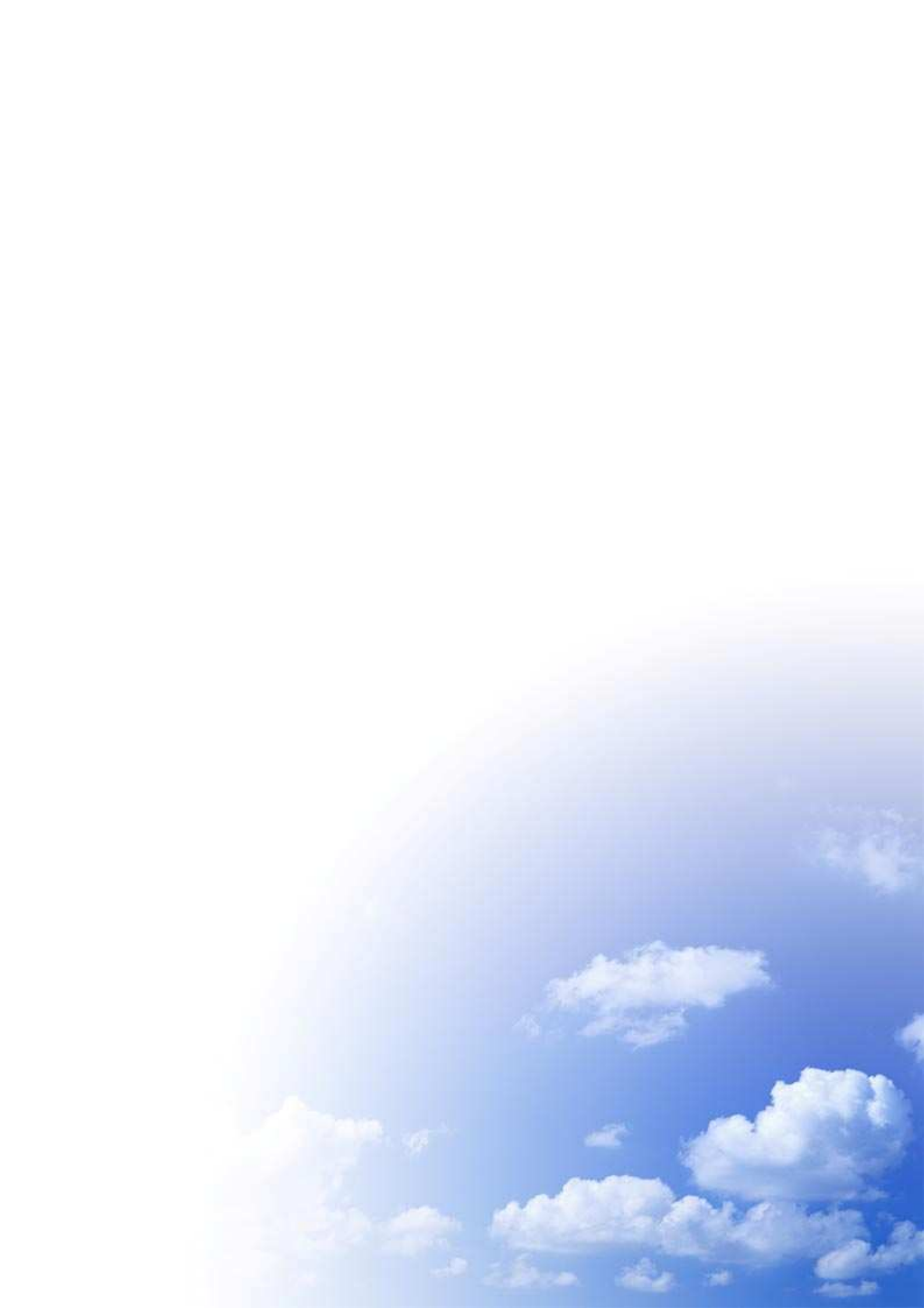


MCS support tool for installers

Project background

The support tool is provided as part of a wider support package for renewable energy businesses carried out for Devon County Council by Regen SW and the Centre for Energy and the Environment (CEE) at the University of Exeter. The business consultation and support exercise carried out for the project identified the Microgeneration Certification Scheme (MCS)[1] as an area where additional advice and information was required by installers.

Microgeneration has a relatively small but important role in raising energy awareness and lowering carbon emissions to help to meet 2020 and 2050 targets. One of the key constraints to meeting the anticipated increase in the adoption of renewable technologies is the number of suitably qualified installers. The main drivers of renewable technologies at this scale are government incentive schemes such as the Feed-In Tariff (FIT) for electricity and the Renewable Heat Incentive (RHI) for heat. For consumers interested in sub 50kW electricity generation and sub 45kW renewable heating systems access to these incentive schemes is dependent on using products and installers that have been MCS certificated. The aim of this scheme is to provide consumers with protection and systems that will perform as expected, while giving government some assurance that public money spent on reducing carbon emissions will be able to deliver.

The demand for low and zero carbon technologies is set to increase, and with it the need for qualified MCS installers. The Coalition Government is committed to its continued use of MCS as the main vehicle for delivering small scale renewables and even though the recent 'fast track' review of FITs saw a large drop in tariffs for large scale PV, those for installations below 50kW remain unchanged. In addition the RHI is scheduled to be extended to the domestic sector in 2012 and is expected to provide a strong kick start to the renewable heat market.

Purpose of tool

The process of becoming MCS certificated is often seen as onerous and time consuming and the cost is regularly cited as a barrier to joining the scheme, particularly for smaller or single handed business. Membership of the scheme is gained through Certification Bodies (CBs) who are approved by the United Kingdom Accreditation Service (UKAS)[2] to assess businesses against the set of MCS standards. Guidance for product manufacturers, installers and members of the public about the scheme is available on the MCS website[3] and while this gives a good outline of the process is does not necessarily illustrate what some of the requirements mean in practice.

While CBs are generally happy to give advice on aspects of the scheme that they offer, there is nonetheless an information gap for installers which has been filled, to some extent, by companies offering a range of products and assistance with MCS certification. These vary from single or half day training courses and/or document templates to more complete services which provide mentors to steer companies through the process. Costs for these services vary from around £100 for a half day seminar or document templates to around £1500 for turnkey solutions. One of the most popular services provides mentoring for around £500. For some businesses these services may represent money well spent and could shorten the route to MCS certification, others may find that they have many of the necessary systems in place already and can achieve the standard with only minor modifications. For a number of businesses the training providers are perceived as an additional tier, adding to the financial burden and reinforcing the notion of process that is too difficult to attempt unaided.

The aim of this document then is to provide a clearer outline of the process, highlight some of the benefits of MCS and to put businesses considering MCS Certification in a better position to make the decision on how best to proceed, whether they choose to approach a third party training organisation or not . It is also

[1] MCS is the industry-led, government endorsed scheme for certifying low and zero carbon micro generation products, and the installation companies who fit them. MCS is operated under licence from DECC by Gemserv Ltd, a specialist utilities and environmental consultancy.

[2] UKAS is the sole national accreditation body recognised by government to assess organisations that provide certification, testing, inspection and calibration services against internationally agreed standards. See www.ukas.com

[3] www.microgenerationcertification.org

hoped that installers who have decided not to pursue MCS certification might be encouraged to look at it again.

Advice on technology specific elements of the scheme is beyond the scope of this document and for the most part installers are confident in their ability to perform the technical aspects of an installation. Many however are less sure about the office assessment and requirements for associated documentation. Guidance on these more generic aspects is provided and should illustrate the rationale behind the scheme and provide a methodology which can be applied to individual technologies.

Format of the tool

The 'tool' is presented as a hyperlinked flowchart based on the guide to the certification process provided on the MCS website. Links lead to additional information on each of the stages described.

Introduction to the Microgeneration Certification Scheme

Businesses that are Microgeneration Certification Scheme (MCS) certificated are an important part of the government's ambition to increase the amount of microgeneration in the UK. Eligibility for financial incentives such as the Feed-In Tariff Scheme (FITs) and Renewable Heat Incentive (RHI) at the smaller scale is dependent on the use of MCS certificated products and installers. Other initiatives such as the Code for Sustainable Homes (CSH) and Standard Assessment Procedure (SAP) and previously grant schemes like the Low Carbon Buildings Programme (LCBP) have all relied on MCS to give a guarantee that work has been carried out in line with best practice.

Where support for renewables is provided through taxation there is an obligation to provide value for money. Linking eligibility for financial support to MCS installers serves two purposes; it simplifies the system for consumers[4] and gives the government some assurance that money is being distributed to installations which are likely to be effective. The MCS scheme is evolving all the time but it is likely that certificated businesses will continue to provide this service for the foreseeable future as the scheme has been endorsed by successive governments. This commitment was recently restated by DECC in the Microgeneration Strategy[5]:

> *"The Microgeneration Certification Scheme (MCS) will be made more effective, through simplified processes, improved governance and better alignment with existing certification schemes and testing requirements at the European and international level."*

The certification scheme for installers covers the supply, design, installation, set-to-work and commissioning of renewable technologies of up to 50kW for electricity and up to 45kW for heat production. Those companies who become certificated can register renewable energy installations on the MCS installation database which will enable an MCS certificate to be generated (subject to a fee of £15 for each installation). Installers who carry out work for MCS companies or are subcontracted by them will be required to operate to the same standards.

Under MCS it is the business that is assessed rather than individual installers and it can be certificated against the MCS Standards by a Certification Body (CB) of its choosing (for details of all CBs see Appendix I). The standards can be divided into two, those which apply to the scheme in general (MCS XXX) and those which are technology specific (MIS XXXX).

General standards		**Technology specific standards**	
Standard	Description	Standard	Description
MCS 001	Installer requirements	MIS 3001	Solar Heating
MCS 002	Building regulations and EU directives	MIS 3002	Solar PV
		MIS 3003	Micro Wind
		MIS 3004	Biomass
		MIS 3005	Heat Pump Systems
		MIS 3006	Micro Hydro
		MIS 3007	Micro CHP (Heat led)
		MIS 3007 – 2	Micro CHP (Electricity led)

Table 1. MCS and MIS installer standards

[4] Previously consumers had to apply for Renewables Obligation Certificates (ROCs) which were sold on the open market to companies who had not fulfilled their own obligations. The system was designed with energy professionals in mind and was seen as over complicated for small producers.

[5] DECC, Microgeneration Strategy, June 2011
www.decc.gov.uk/assets/decc/11/meeting-energy-demand/microgeneration/2015-microgeneration-strategy.pdf

In addition a range of guidance documents are also available (see Table 2). All of these documents are subject to review and the latest versions of the documents should be consulted; all are available directly from the MCS website[6].

Guide	Description
MCS Brand Guidelines	Correct use of the MCS approved product/ installer logo
MCS Metering Guidance	Electricity metering for FITs
Installation used for assessment	Procedure for certification of installation used in the MCS assessment
MCS Installer guide	Aims of the MCS scheme and description of the process of certification

Table 2. MCS guidance documents

The process of MCS certification consists of an office witness assessment where the way the business documents its activities is inspected, and a site witness assessment where an installation which the contractor has been fully responsible for, and has issued a commissioning certificate, is inspected. In order to satisfy the requirements of the scheme all of the key business procedures have to be documented and it must be demonstrated that the installation has been carried out in accordance with these procedures and with the MCS and MIS Standards.

By submitting a series of audited procedures the installer is further demonstrating that quality and consistency of installations can be maintained for all customers, from the initial enquiry to quotes, planning, purchasing, installation and commissioning. Once certificated the company must maintain MCS membership through 'surveillance visits' for which they will be charged. These will usually take place on an annual basis, at least one in any year, to ensure that the company continues to operate within the scheme requirements.

A note on sub-contracting

It will be prudent to give some early consideration as to whether the business is ready to bear the additional responsibilities and costs of joining the scheme. The number of FIT installations in Devon is growing rapidly (Figure 1) and while MCS certification will open up new markets it is not a guarantee of work. If renewable energy installations are likely to be an occasional rather than integral part of the business activities, it may be that the cost of MCS certification cannot be justified. In such cases there are other possibilities including sub-contracting and umbrella schemes where an existing MCS company has the contract with the consumer and certificates installations that have been carried out by third parties. The certificating company must however be satisfied that the installation has been carried out in accordance with the relevant standards and a formal subcontract agreement is required to ensure that all work is undertaken in line with the policies and procedures employed by the MCS certificated contractor. All of the technology specific standards include a section on subcontracting.

[6] http://www.microgenerationcertification.org/installers/installers

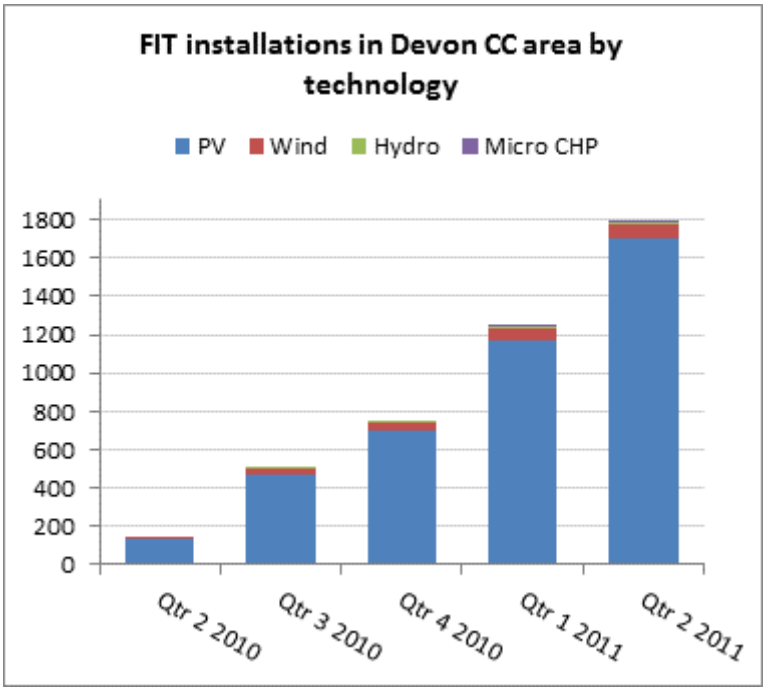


Figure 1. FIT installations in DCC area by technology

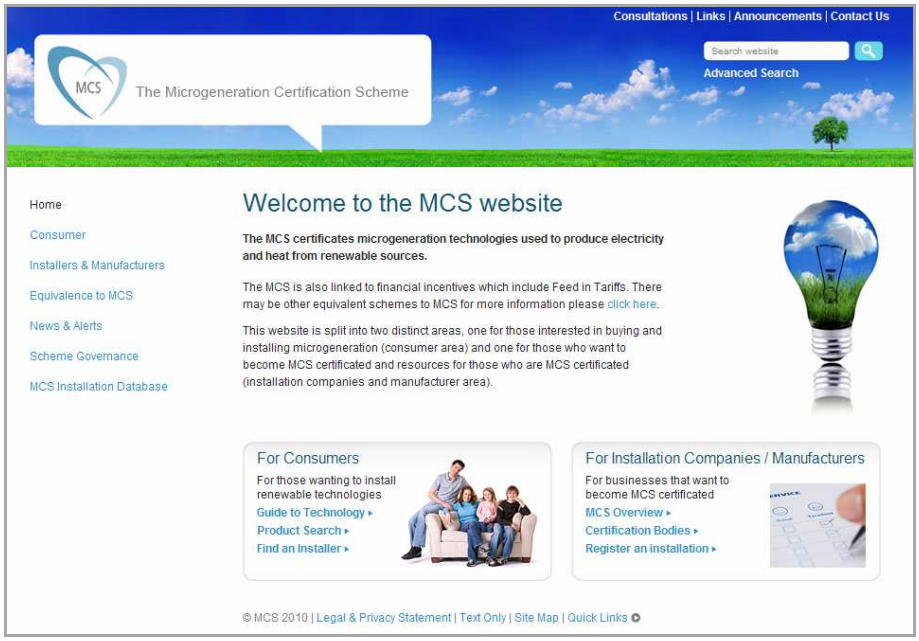


Figure 2. MCS website home page

Guide to the MCS tool

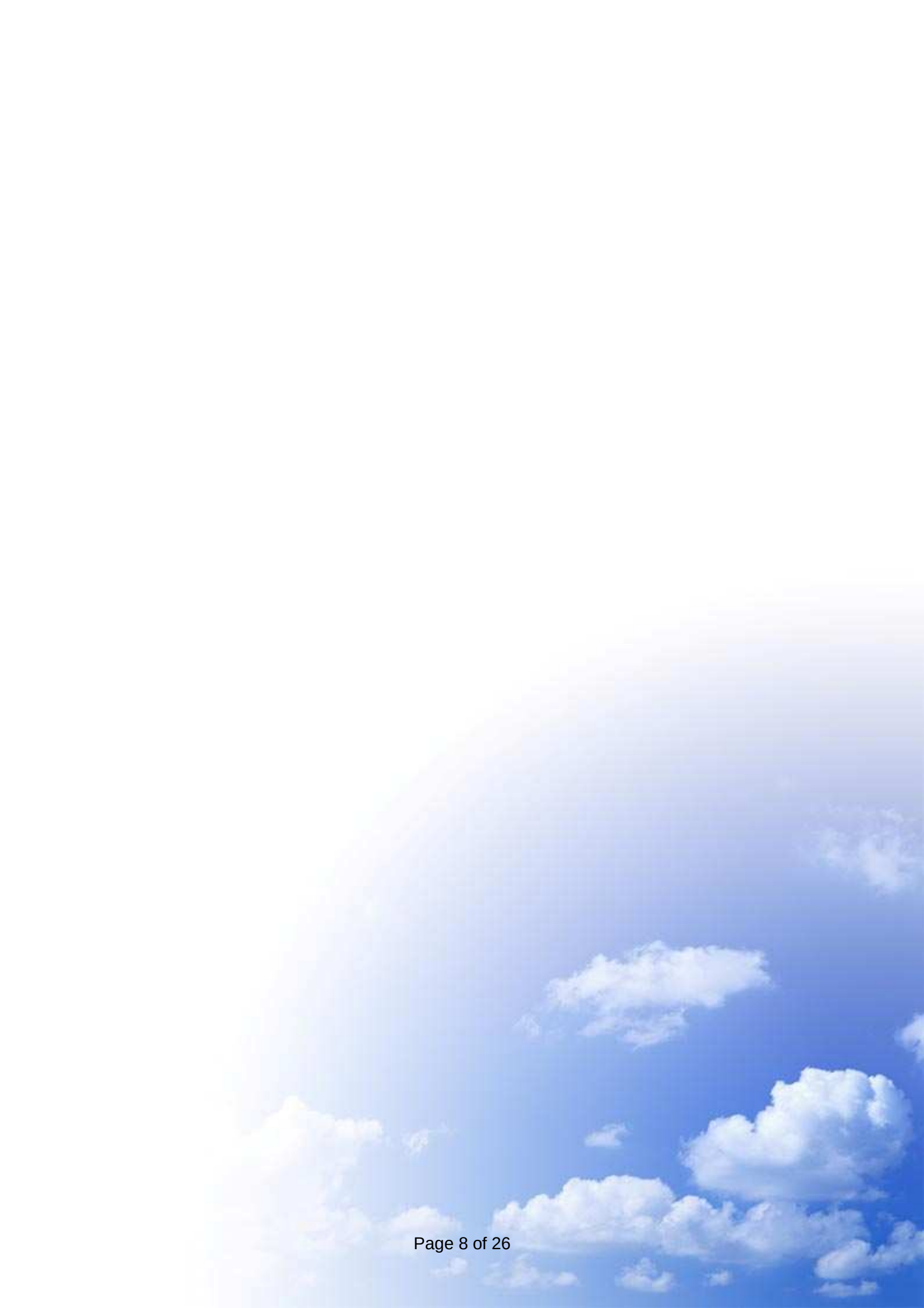
The MCS tool is based on the MCS certification flowchart provided in the installer guide on the MCS website[7]. While the flowchart gives a good overview of the process it also raises questions as to how some of the requirements might be met in practice and for different sizes of business. The MCS flowchart is reproduced below with the addition of a series of information symbols (see right) to indicate where more detail is provided. In the electronic version these are hyperlinked (using *Ctrl + Click)* to the relevant text and a 'return' key is provided to get back to the flowchart. The text is presented in chronological order so the document may be read in a more 'linear' fashion in the hard copy.

Additional information available

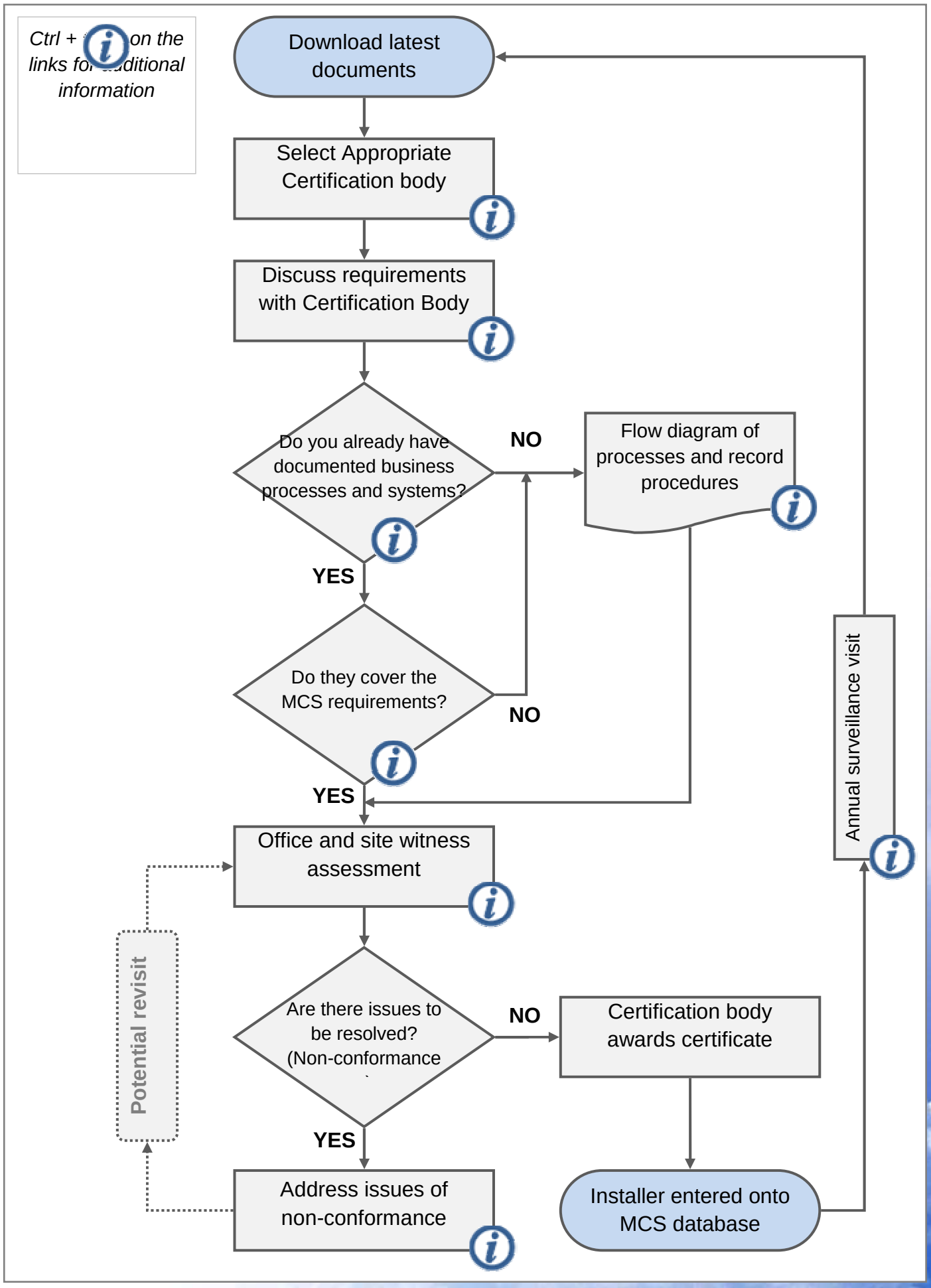
Appendices are provided at the end of the document which summarise details of the certification bodies and a guide to their fee structures. All MCS businesses are also required to have signed up to a consumer code, of which there is currently only one, the REAL Assurance Scheme from the Renewable Energy Association (REA) whose details are also provided. These are correct at the time of publishing but may be subject to change and it will always be worth checking for the latest details with the relevant organisation before proceeding.

Information has been gathered from various sources including, wherever possible, the certification bodies themselves, and while every effort has been made to ensure the accuracy of the information given, no responsibility can be taken for inaccuracies which may occur.

[7] *Low and Zero Carbon Technologies: Opportunities and the MCS*
www.microgenerationcertification.org/admin/documents/Opportunities%20and%20the%20MCS_web.pdf



MCS flowchart



Select Appropriate Certification Body

There are a number of factors to consider when choosing which Certification Body (CB) to go with – technologies, price, service, employees and existing memberships may all effect the decision.

i. **Technologies**
Not all Certification Bodies offer all technologies so make sure the technology or technologies you are interested in are offered.

ii. **Price**
Prices and charging structures vary between different CBs. In particular charges for additional technologies and renewal vary although the standard £110 fee paid to MCS through Gemserv is required by all. A summary of these can be found in Appendix 1 and is correct at the time of writing. For the latest charging information always check the appropriate CB website.

iii. **Existing membership**
If you are already registered with one of the CBs, the registration fees may be lower. In other cases some registration fees are inclusive of membership to the awarding body.

iv. **Service**
There may be other, less tangible benefits, for choosing different CBs; good customer service, a clearly defined procedure and easy access to information and materials may all help reduce the time cost of the process to the business. Some CBs, for example provide additional information in the form of pre-assessment packs in order to help businesses prepare for their assessment.

v. **Employees**
Schemes that have the option to cover more than one operative are likely to represent better value for larger companies than the individual certification of multiple employees.

vi. **Timescale**
Different CBs may operate to slightly different timescales and, depending on the number of available assessors in an area, it may not be possible to be assessed immediately. The other thing to consider is the state of readiness of the company, typically it will take the company four to six weeks to prepare for the assessment although it can vary considerably depending on the complexity of the business and the time spent on putting the documentation together.

The role of the Certification Body is to assess the suitability of the business to join the scheme and as such they are not allowed to give business specific advice however most should be prepared to give some guidance on the interpretation of some of the clauses. All CBs provide a contact phone number and should be able to clear up any details of the application process that are not immediately clear.

Return to flowchart

Discuss requirements with Certification Body

In all cases it is advisable to consult with more than one CB before committing, each has its own timescale and pricing structure and it is likely that some CBs will be better suited to some businesses than others. Things like travel and subsistence costs for the assessor may also need to be taken into account.

A phone call will also help to establish whether the company is ready to apply to join the scheme. This is important because in the event that 'non-conformities' are raised at the end of an assessment, the company has 45 days to address these. If the number of non-conformities is large, a full or partial reassessment may be required and will attract additional cost. Some CBs will provide a pre-assessment checklist to help companies gauge their readiness for putting in the application.

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Documented Systems and processes

While all businesses will have some system of documenting activities and maintaining records, not all will be deemed sufficient for MCS purposes. Installers are, in many ways, responsible for the successful implementation of incentive schemes like FITs or the RHI and MCS is seen as a means to provide the reassurance that the government needs. An important part of the success of these schemes is that consumers enjoy a positive experience and companies will be expected to demonstrate that this can be provided consistently. Consequently the documentation of procedures and systems is an important aspect of MCS certification and is seen as a demonstration that the business itself is fit for this purpose.

Technical aspects of renewable energy installations are (at least) partially covered through existing Building Regulations and Competent Persons Schemes (CPS), however MCS goes further than the building regulations by putting a greater emphasis on performance by looking at the way the business is structured and run. Means to prevent inappropriate or high pressure sales techniques and methods for dealing with disputes are also sought through membership of a consumer code such as the REAL Assurance scheme (currently the only option although alternatives are expected in the future). These are seen as important steps in building consumer confidence in renewable technologies and making sure that microgeneration installations are delivered with a consistent and repeatable quality. These are also likely to be key elements in the growth of the sector as a whole.

The complexity of the documentation required will depend on the type and scale of business activities. The system developed should reflect the business and be useable on an everyday basis rather than something which is merely presented for compliance. It is not uncommon for businesses to present enormous manuals as part of their assessment which are clearly unusable. The aim should always be to keep things as simple as is reasonable, only then will the system be used and its benefits realised. The benefits of a management system when its is well documented include:

- Consistent and repeatable approach to installations
- Protection against business interruption due to illness or injury
- Standard forms
- Certificates and registration easily maintained
- Simplifies induction of new staff
- Business remains auditable and accountable at all times

A system which is designed only ‘to be seen to be’ compliant or hastily copied from another’s template will end up being a burden if it does not reflect the way the business works. A system which is designed to suit the business can help to improve working practices, increase efficiency and, eventually, save the business time and money.

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Flow diagram of processes, record of procedures

Much of the detail of what is required in this section is presented in MCS 001 (see Appendix III for more detail). The requirement for documentation and, in particular, a Quality Management System (QMS) is seen by many small businesses and single handed installers as a large undertaking. In practice the size of the task should reflect the complexity and size of the business. The process can generally be divided into two parts – flowcharting and recording/documenting the business activities. The resulting documents and procedures are subsequently managed and maintained through a system of document numbering and control. Finally an overarching document or ‘Quality Plan’ provides a description of the system, which is effectively a map of the system that is easy interpreted by anyone who needs to understand the operation of the business.

Flowcharts

A good starting point is to consider at the top level how the business operates by drawing a simple high level flowchart. This can be done using on a computer using a word processing program but can just as easily be done with pen and paper. A list of common flowchart symbols is given in Appendix V (the use of

the ‘correct’ symbols may help with designing the flowchart but is in no way compulsory). In the simplest cases the flow chart will start with an enquiry from a customer and end with the handover of a completed installation. The steps in between will vary for different technologies but may look something like the example given in Figure 3.

Each individual stage can be considered as a process in its own right and there will be a range of options that could apply. If these are simple they could be ‘tacked on’ to the original flowchart or, as the diagram can quickly become over complicated, it may be better to start another flowchart to describe a ‘sub-procedure’ which captures all of the activities within that process. For example for the ‘Enquiry’ process in Figure 3 there may be different ways with dealing with the enquiry depending on how it arrives e.g. phone, email, web form, letter. The range of subsequent actions e.g. ring back, email/post more information, site visit can also be recorded (see Figure 4). Breaking down each stage in this way is often referred to as a divide a ‘divide and conquer’ strategy and can be used to make complex procedures more manageable. If necessary, a third tier of ‘sub-sub-procedures’ could be created to prevent individual flowcharts from getting too complicated although beyond this the complexity of the additional layers would probably outweigh the simplicity of the resulting flowcharts.

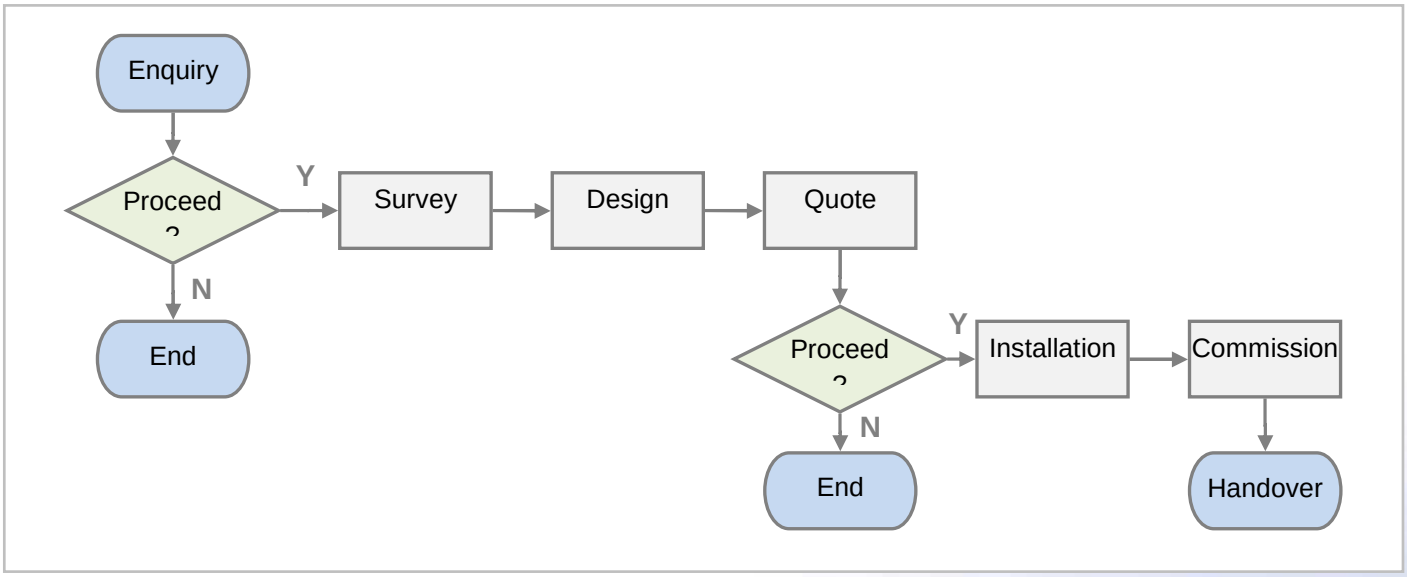


Figure 3. Simple top level flowchart

The most important thing is to encapsulate the way the business operates one step at a time so that nothing gets left out. It is equally important to be consistent so tracing the progress of a job through the flowchart does not result in any ambiguity (i.e. one process with more than one route through the flowchart) or arriving at a ‘dead end’ prematurely (i.e. a process is not able to be completed).

Flowcharts are a particularly useful tool because the inputs and outputs for each ‘sub-procedure’ are defined almost naturally. If for example an enquiry (in Figure 3) proceeds to the ‘Survey’ stage all of the relevant information (customer name, address, job details, access etc.) must be collected during the preceding ‘Enquiry’ process. Similarly, it will not be possible to begin the ‘Design’ procedure without data gathered from the ‘Survey’ procedure. Should the enquiry go no further, there will still be a record of the customer contact with perhaps some detail as to why the customer decided not to proceed. Such information, gathered over time, will help the business to assess its success rate and may inform the pricing structure and policies regarding marketing and advertising.

The use of flowcharts is widely recommended as they tend to be easy to follow but it is not compulsory. In some cases (or for some procedures) a set of written statements or series of checklists may be preferred or indeed a combination of the two. Lists may be simpler to construct but it becomes more difficult to capture decision making processes and ‘loops’ where some processes need to be reiterated, also more care is also needed to maintain consistency.

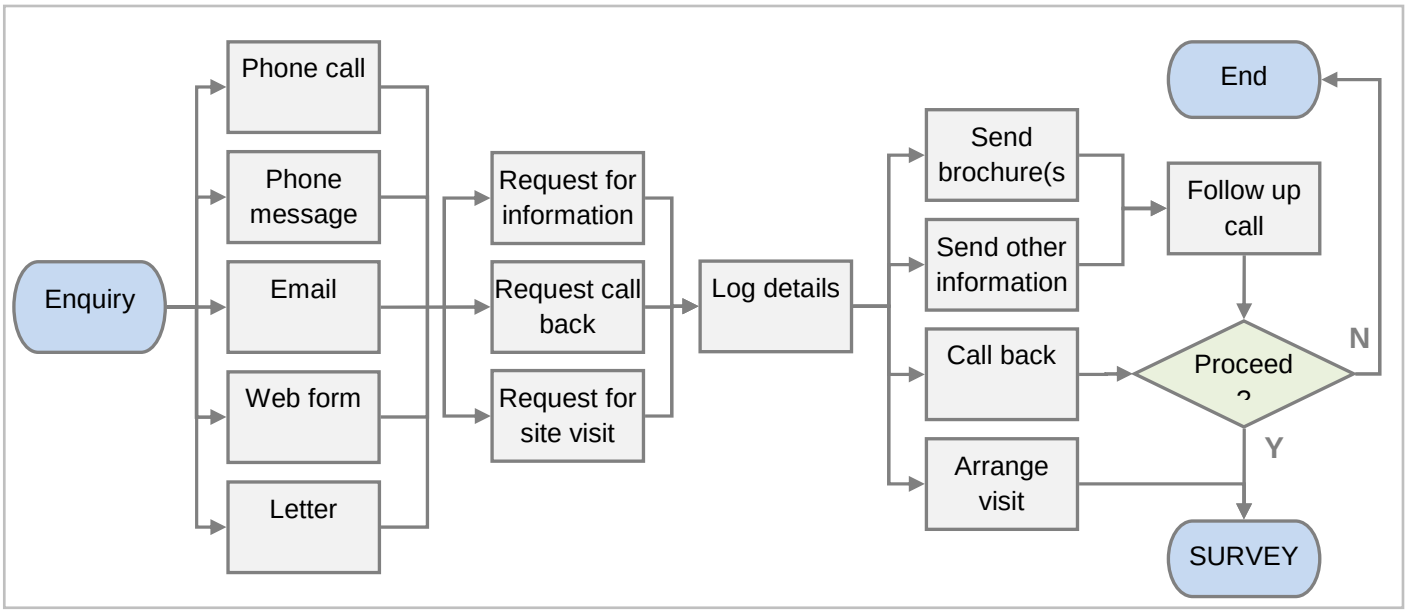


Figure 4. Example flowchart for an 'Enquiry' sub-procedure

Recording and documenting

Once the procedures and sub-procedures have been assembled in a coherent way, the whole range of likely enquiries and outcomes for any job should be traceable by following the 'map' of the system that has been created. The next step is to revisit each of the stages in turn and provide a clear description of each task within the procedure, perhaps as an instruction set or checklist.

For some task descriptions information will need to be recorded so consideration will have to be given as to which details are required and how they should be kept, as an electronic record or in paper form for example. From a quality management perspective 'documents' and 'records' are distinct; documents are '*dynamic*' in that they are subject to changes and modifications, perhaps as the business evolves or as a result of changes in procedures or staff. The flowchart procedures would therefore be described in 'documents'. Records on the other hand are '*static*' in that one written they are fixed and provide the historical evidence of the outputs of the procedures described in the documents.

An important consideration will be what format to use for each piece of information and where or how to store it. Some businesses may prefer paper based systems and there is no rule against this but it may make the system harder to update in the future. Using a computer, a simple folder structure on a hard drive can be used to group similar documents by type so that they can be easily found. In addition computers can simplify many of the tasks such as designing templates and forms and allow electronic copies of documents to be held. The ability to cheaply backup electronic data to external hard drives and remote servers provides another good reason to consider an electronic system. Other possibilities include the use of online documentation through free applications such 'Google Docs' for example (there are others) which allows anyone in the company to access documents from any computer with a variety of permissions (read-only, read and write etc.)

Piece by piece a system of documentation and recording can be developed from the flowcharts which will mirror the way that the company operates. It is the ability to trace any job at every stage through the system by the (paper or electronic) trail that it leaves that makes the QMS a potentially powerful business tool. Whether the system is developed on paper or electronically, it should help the business to streamline its activities and provide a consistent quality of service to its customers.

Document numbering and control

Whenever records or documents and templates are created each will need a unique identifier so numbering and version control becomes important. A numbering system gives all records a unique identifier and allows document changes to be tracked so that only the latest versions are used. Typically document numbering systems will have three parts and may be in a format such as ***XX-YY-Z.Z***; where ***XX*** is the document type (*INV* for invoice, *PROC* for procedure for example), ***YYY*** is the document number (001, 002 . . .) and ***Z.Z*** is the version number (1.0, 2.3, etc.). Version numbers are often given in decimal format

where the decimal part is incremented for minor amendments while the integer part is changed where the document is substantially altered or updated.

Having set up a system, consideration needs to be given as to how it is controlled. This will include a method for reviewing and approving documents covering, for example, the way that changes to documents are notified or how checks are made to ensure that the most current version of a document is used. Often this responsibility will be delegated to the 'owner' or 'keeper' of the document which ensures that all changes are managed by a single person and multiple versions of the same document are not allowed to become 'live' at the same time. In a smaller business the responsibility may fall to one person while those with additional employees may choose to delegate to the most appropriate member of staff, perhaps with specific managerial or technical expertise. External documents such as standards, regulations and manuals, or maybe drawings from customers or suppliers, also need to be controlled i.e. numbered and checked so that the latest versions are always apparent and available.

Finally a catalogue of all the documents that the business uses should be provided, for example using a spread sheet or table. This 'Master Document' should list each document with its document number, a short description of its purpose and its location (physical location or folder path e.g. "*C:\Documents and Settings\My Documents\My Business\Document Control"* in a Windows based system). Other information likely to be included would be the 'owner' of the document, the number of pages, the date that the document was last amended and when it is scheduled for review. From the Master Document it should be possible for anyone to locate records and appropriate documents relating to any aspect of the business activity.

Quality Plan

The process of documenting and flowcharting the business activities will have provided much of what is necessary for a QMS but these need to be drawn together to provide a coherent 'map' of the business. In the first instance this should be a simple description of the way that the business has been broken down into components, presented in sections to reflect the way that the business procedures have been organised. This could include another flowchart relating, for example, procedures to forms and other documents and the master document itself (see Figure 5).

The completed system will effectively describe the business and how it does things. By referring to the documentation system it should, in theory, be possible for someone else to run the business in your absence. This may be useful in the event of sickness or leave, but also allows the business to provide a consistent level of service and to repeat successes. In summary a Quality plan and Quality Management System should be:

- Functional – fit for purpose, accurately reflect the scope and scale of business activities
- Reliable – robust, consistent across different types of jobs, kept up to date, easy to back up and recover
- Easy to use - simple, streamlined, understood by all employees
- Efficient – saves time, prevents duplication of effort, reduces incidence and extent of problems
- Easy to maintain – content will be kept current, improves reliability and ease of use
- Adaptable – to changes in the structure or operation of the business

Many of these are of course interdependent and it is worth reiterating that a QMS and Quality Plan should support the business, if it is found to be burdensome then it is likely that the system that has been created is overcomplicated or does not reflect the true nature of the business. Once completed the system should not be 'cast in stone' but should be able to adapt to changes, perhaps as a result of a change in business direction, new staff or revised procedures. For this reason there is a requirement within MCS 001 to review the *IQC* on a quarterly basis (Clause 4) to ensure that it remains fit for purpose.

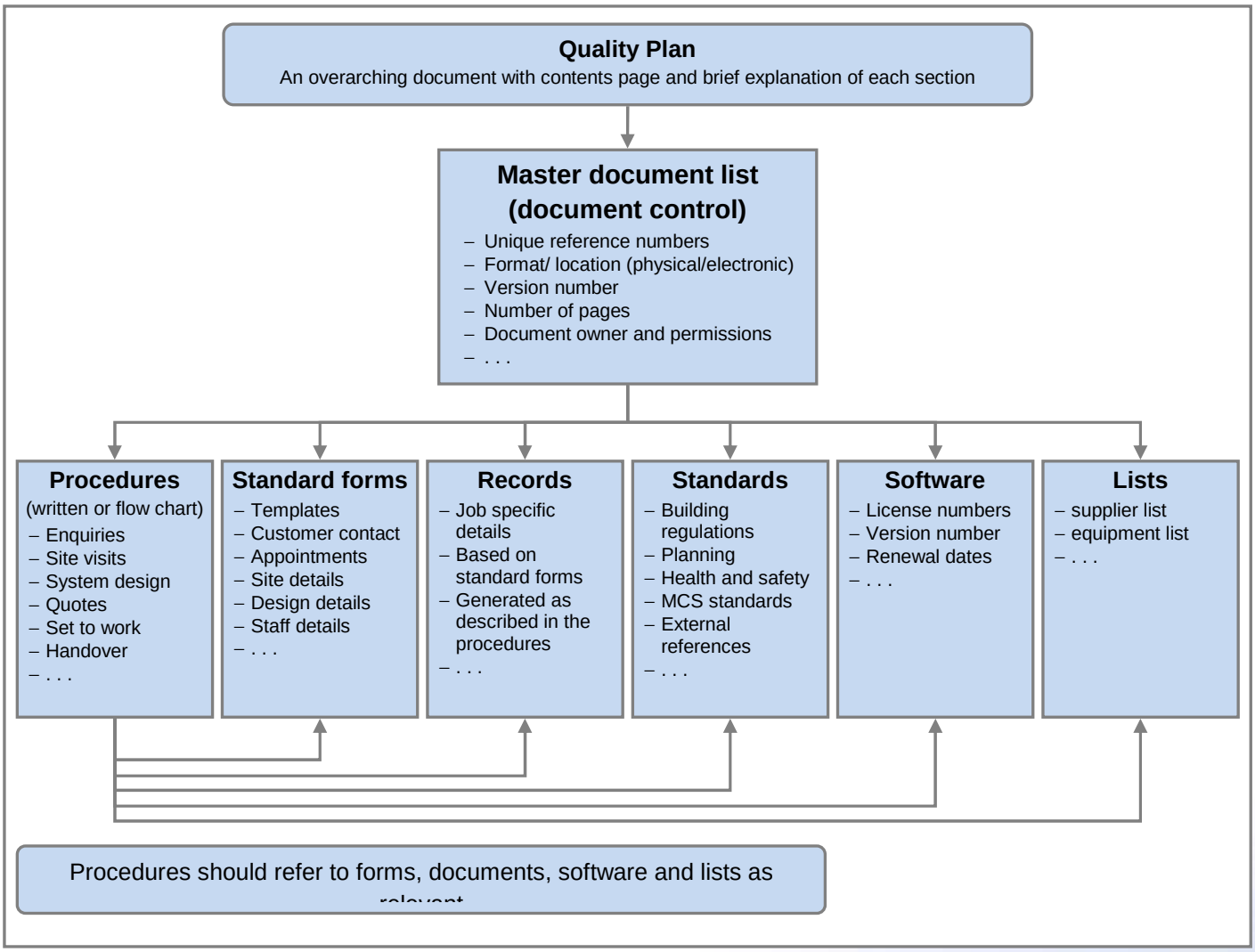


Figure 5.Schematic of a QMS[8]

Return to flowchart

Do they cover the MCS requirements?

It is unlikely that an existing system of documentation will be completely compatible with MCS requirements from the outset. However it is estimated that most competent businesses will already be doing around 95% of what is required.

There are a range of third parties offering support and products to help businesses gain MCS certification and there is understandably a strong temptation to reach for an 'off-the-shelf' solution in the form of readymade templates or software packages. These may provide a good option for some businesses and may even deliver on the promise of saving time and money but ultimately every business is run differently and a 'one-size-fits-all model' may end up costing more in the long term. Problems may arise for example in trying to make the individual business procedures 'fit' a standard template.

This is not the best way to prepare a QMS as the documentation should reflect the business processes and not vice versa. The resulting system may be harder to manage and could end up costing time rather than saving it. Something that is frequently overlooked, and should not be underestimated, is the benefit to the business of going through the *process* of preparing a QMS by itself. This could be considered as an opportunity to take a really good look at the business from top to bottom, reflect on how everyday things are done and identify areas that might be improved.

[8] Derived from *MCS – Installer Process outline*, David Forward, BRE.

The details of the requirements for an MCS compliant QMS or *Installation Quality Control System* (IQC) can be found in Appendix A of MCS 001. This appendix lists 19 clauses and a description of the *minimum* requirements for each documented activity (see Table 3 for a summary). Each of these clauses is concerned with a different aspect of the documentation the business needs to provide. Taken together, and combined with a system of document management or control, and quality plan these are the basis of the Quality Management System or QMS that is required by Clause 2.

Some of the language in these requirements may appear 'unusual', and in some cases may appear not to apply to your businesses. This is partly due to the fact that some of the language is borrowed from other standards such as ISO 9001 which is aimed at product manufacturers and a range of other business types and not just renewable energy installers. The contents of MCS 001 are reproduced in Appendix III and have been annoted where the meaning of a clause or how it might apply to an installer is not quite clear.

Parallels are often drawn between MCS and other quality standards, in particular ISO 9001 from which some of the language is borrowed. Unlike ISO 9001, the QMS described in the MCS standards places less emphasis on deriving specific performance indicators and a drive for 'continual improvement'. There is an element of monitoring and improvement within MCS as the system should be subject to a (minimum) quarterly review of the procedures to identify areas where it might perform better. Achieving certification for one scheme will go some way to achieving recognition for the other, but differences remain and success in either will be not sufficient to guarantee certification in both.

The contents of MCS 001 are currently under review and among items being considered are the language, how the quality assurance (QA) aspects of the document work in the real world and how the process of certification can be streamlined for smaller companies without watering down the standard. The aim will be to provide a document that is more 'installer friendly' and addresses more clearly some of the business models which may not be meeting the Scheme rules.

1.	Review of company details/ responsibility
2.	Review of Quality Management System/Quality Plan
3.	Action taken to resolve previous non-conformities
4.	Internal review
5.	Document control
6.	Customer requirements and contracts
7.	Purchasing
8.	Review of product specification
9.	Action on non-conforming material
10.	Inspection and in process testing
11.	Equipment
12.	Storage, handling, packaging and transportation
13.	Certification Marks
14.	Records
15.	Complaints
16.	Corrective / preventive action
17.	Training and competence
18.	Health and safety
19.	Audit testing

Table 3. Summary of clauses from MCS 001, Appendix A

Return to flowchart

Office and site witness assessment

The assessment will usually be conducted by one inspector in a single day, throughout which technical representatives of the company must be present. It will consist of an office based assessment and a site visit.

The office based assessment will review the company procedures and methods of documentation and will be looking to see how the design, installation, set to work and commissioning of the installation is managed and recorded. The use of the relevant technology specific standards outlined in Table 1 will need to be apparent, as well as contractual elements of the work. The site based assessment will examine an installation which the contractor has been fully responsible for and commissioned. It will review the technical competence of the work that has been carried out and make sure that the installation process is reflected adequately in the documented procedures and records.

Although it will vary from business to business, and different assessors will have their own preferred method of working, the office assessment will typically last for 3 or 4 hours and similar amount of time will be spent on the site assessment, although this may by slightly less depending on the complexity of the installation.

At the end of the assessment a closing meeting will be held to discuss observations and recommendations.

Return to flowchart

Address issues of non-conformance

If at the end of the assessment, the documentation, procedures or installation are found to be incomplete or do not comply with the MCS requirements a list of the non-conformities will be issued.

Common causes of non-compliance include poor document control (Clause 5) and failure to properly integrate or to reference the technology specific standards into the processes covered by the QMS.

Non-conformance at some level is quite common and should not be a major cause for concern. The report will explain why certification cannot be completed. Normally the company has 45 days to respond, usually by email, with evidence of the corrective or preventative actions that have been undertaken.

If the non-conformities are too numerous or considered severe enough, it may be necessary to arrange a full (site and office) assessment or a partial (site or office) assessment. In each case this will attract a reassessment fee which varies between providers but will be around £200-£300 for a half day or £340-£450 for a full day.

It will be important to make sure the company understands why the non-conformities have been raised so that actions can be completed within the 45 day limit. This time limit and the prospect of having to pay a reassessment fee should underline the importance of being well prepared in advance of the initial assessment.

Return to flowchart

Annual surveillance

In order to maintain MCS certification an annual surveillance visit will be required. These visits will follow a similar pattern to the initial assessment using an example installation selected from the MCS installation database to ensure that all of the requirements of MCS 001 and the relevant technology specific MIS standards have been met. The charges for this will vary between providers (see Appendix II).

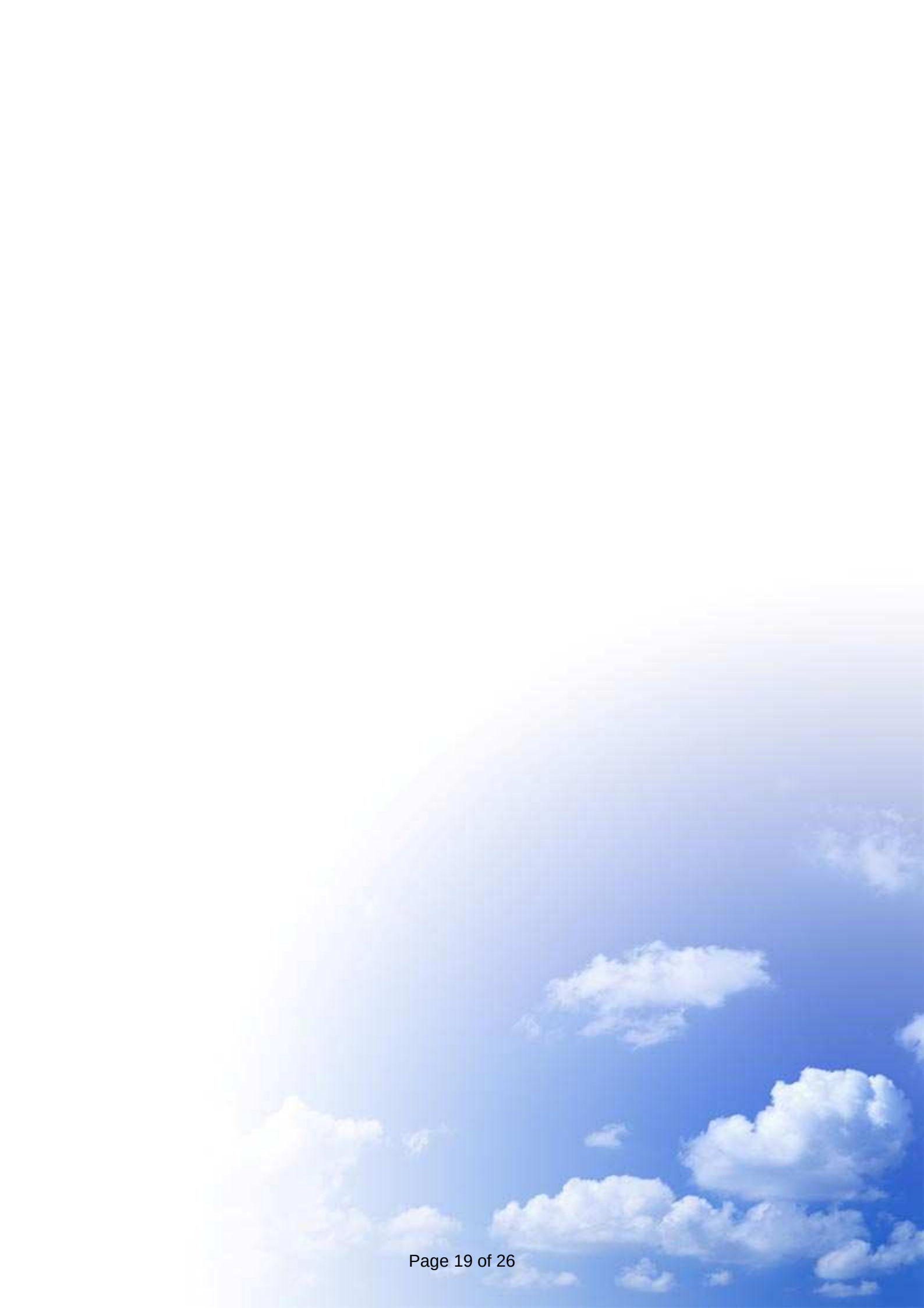
Unlike the initial assessment, there will be a whole range of records to review as the QMS system will have been running for a year. It will therefore be important to be able to demonstrate that the processes which are concerned with reviewing and updating information have been maintained as well as those which document the progress of installations.

Return to flowchart

Appendix I

List of Certification bodies

Organisation	Technologies					
	Micro CHP	Wind turbines	Solar thermal	Biomass	Heat pumps	Solar photovoltaic
BRE Global Ltd. 0845 618 1514 microgeninstallers@bre.co.uk	✓	✓	✓	✓	✓	✓
Corgi Services Ltd. 0844 879 4798 mcs@corgi-membership.com			✓		✓	✓
ECA Certification Ltd. incorporating ELECSA 0845 634 9043 microgeneration@elecsa.co.uk	✓	✓	✓	✓	✓	✓
HETAS 0845 6345626 mcs@hetas.co.uk			✓	✓		
NAPIT Certification Ltd. 0845 543 0330 microgeneration@napit.org.uk	✓	✓	✓	✓	✓	✓
NICEIC Group 0800 519 5190 mcs@niceic.com		✓	✓	✓	✓	✓
Stroma Certification Ltd. 0845 621 11 11 mcs@stroma.com			✓		✓	✓



Appendix II

Summary of charges

CERTIFICATION BODY	Initial Application/Registration and Assessment Fees (including £110 Gemserv MCS fee)						Extension to scope	Additional Assessment Fee		Annual Renewal Fees (including £110 Gemserv MCS fee)					
	Number of technologies							½ day	1 day	Number of technologies					
	1	2	3	4	5	6				1	2	3	4	5	6
BRE Global Ltd.[1]	£1910	£2410	£2910	£3410	£3910	£4410	£750	£750	£750	£1160	£1610	£2060	£2510	£2960	£3410
Corgi Services Ltd.[2,3]	£540	£725	£1015	-	-	-	£290[4]	-	£450	£540			-	-	-
ECA Certification Ltd incorporating ELECSA	£630	£750	£1120	£1490	£1860	£2230	£270[5]	£270	£430	£390	£530	£900	£1270	£1640	£2010
HETAS[6,7,8,9]	£895	£1045	-	-	-	-	-	£250	£350	£795	£945	-	-	-	-
NAPIT Certification[10] **Ltd.**	£590	£770	£1010	£1250	£1490	£1730	£340[11]	£200	£340	£470	£650	£890	£1130	£1370	£1610
NICEIC Group	£609	£785	£1105	£1355	£1605	-	£399	£299	£399	£509	£685	£920	£1210	£1410	-
Stroma Certification Ltd.	£545	£710	£890	-	-	-	-	£200	£340	-	-	-	-	-	-

Notes

i. Figures are based on fees as advertised online and are believed to be correct as of September 2011. All fees are exclusive of VAT.

ii. There may be additional fees for items such as an amendment to certificate details, postponement or cancellation of the assessment or assessment visit, where minor non-conformities are not resolved after a first review, change of or additional technical nominee, issuing a replacement MCS certificate or reinstatement to the MCS database.

iii. Fees may vary depending on the number of installers, the number of contracting offices and location. Installers should contact Certification Bodies directly to confirm fees for individual circumstances.

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[1] These fees apply to installation companies of up to 15 employees operation from a single contracting office in the UK.
[2] Fees apply to installation companies of up to 10 employees.
[3] Corgi includes free Corgi Trade membership (value £120) as part of their MCS certification.
[4] For one technology, £450 for two technologies.
[5] For a ½ day physical assessment. Remote review of documentation, where allowable, is £35 and is confirmed at next surveillance
[6] Fees apply for up to 5 installer operatives on one site.
[7] Fee includes membership of HETAS Competent Person Scheme (value £365 for the first year then £205 annually).
[8] MCS only (without CPS) applications are £1100 for one technology and £1600 for two technologies. Annual renewal fees are £1000 for one technology and £1450 for two technologies.
[9] Existing HETAS registered installers are charged reduced initial application fees of £700 for one technology and £850 for two technologies.
[10] Related elements of CPS (e.g. Parts G, J, defined scope Part P and relevant elements of L) will be granted free of charge provided that CPS requirements are met during the assessment.
[11] Additional extensions added at same time are £240 each.

iv. There is a £15 notification fee per technology per installation payable to Gemserv the MCS administrator.

Appendix III

MCS 001 Appendix A

Appendix A is reproduced from MCS 001 (Issue 1.5), the actual requirements are shown *italicised in grey*. Some of these are self-explanatory while the relevance of others to a renewable energy installer may less clear. An explanation or interpretation of each requirement is given below with some suggestions as to how compliance might be achieved. These are neither exclusive nor exhaustive but are provided as a starting point and consideration will need to be given to what is appropriate for the business in each case.

1.	***Review of company details/ responsibility*** *During assessment and surveillance visits, the assessor will check the details from the application form or certificate(s) to ensure that all details are correct. The Company is asked to specify a named individual "Nominee", whose responsibility shall be the control and overall supervision of all activities, which fall within the scope of the Scheme. This Nominee shall be the primary contact between the Company and the certification body.* *The Company shall document who is responsible for each activity and their deputy or nominee.* If the business has more than one employee a tree diagram may be useful. The nominee may be someone other than the managing director/owner but must be someone who can take responsibly for all elements of compliance with the scheme.
2.	***Review of Quality Management System/Quality Plan*** *During the assessment the status of the Company's Quality Management System or Quality Plan will be reviewed as appropriate.* This will take place as part of the office witness assessment and some Certification Bodies may include a pre-assessment form either as the first step in the process or in preparation for submitting an application. This will give the business an indication of its readiness to engage in the process. Bear in mind that the time to address non-conformities is limited to 45 days so it pays to make sure that the company is ready to be assessed before continuing with the application.
3.	***Action taken to resolve previous non-conformities*** *At the time of assessment, the Assessor shall review any previous non-conformities to ensure that the appropriate corrective and preventative actions have been taken and have been satisfactorily completed and implemented.* A record of the non-conformities along with a list of actions taken to correct them should be kept. Timescales or completion dates of actions and staff involvement will not only provide evidence but will also useful to refer to in the future. This record of activity can become more useful over time, as the business evolves or seeks certification for additional technologies.
4.	***Internal review*** *The Nominee shall hold regular (at least quarterly) meetings with other staff members to review the effect of each of the Installation Quality Control procedures and deal with any problems in the system. Records of these meetings and corrective actions shall be kept by the Company and will be reviewed by Assessors.* If you are a sole trader, having a quarterly 'meeting with yourself' may seem a little strange, however the point is to make sure that the Quality Management System that has been set up is reviewed on a regular basis and steps are taken to makes changes where the system does not perform as required. For a small business/sole trader, time should be set aside to go through the list of procedures with and provide a comment on each of them as to how well that procedure works. If there is scope for improving a procedure, it may be prudent to consider the amount of effort that is likely to be required (major, minor etc.) and the timescale within which adjustments should be made (non-urgent, urgent, critical etc.) This may help to prioritise any subsequent actions that need to be taken.

5.	***Document control***

The Company shall have a master list or equivalent document which details all documents and data associated with the installation process including and material specifications. As a minimum, the list shall contain the document reference, issue status, number of pages and approval authorisation.

All documents and data shall have a unique identity and page number on every page, be authorised for use by representatives of the Company and be available at all locations where they are to be used. Superseded/obsolete documents shall be removed from all points of issue. The Company shall document procedures, which determine how the above requirements are managed.

Note: Documented procedures are acceptable in electronic form.

Procedures shall also identify the method for back up and retrieval of documentation and data, whether in hard copy or electronic formats.

The Company shall maintain copies of relevant national and international standards associated with the installation(s) and have a documented method/mechanism for ensuring that they have access to the latest editions including any amendments.

Where software is used for calculation or verification a control process must be in place to ensure the correct version of software is being used.

The company shall have access to and demonstrate that they work to the most up to date copies of building regulations, planning regulations and Health and Safety Regulations.

Poor document control is a common cause of non-compliance. Without sufficient document control procedures the QMS can quickly become out of date or irrelevant and there is a risk of undermining the whole system and a separate procedure for managing the QMS is required.

Requirements such as document numbering are easily automated in word processing packages while document 'owners' will generally be responsible for keeping internal documents up to date. One of the benefits of an electronic system is that the task of updating documents is easier as is creating a back up.

Keeping up to date with relevant standards can be achieved easily by signing up for email alerts or RSS feeds from relevant organisations. A secondary measure such as a regular manual check of version numbers with the latest releases is also recommended.

For more detail on document numbering and control see the appropriate section above.

6.	***Customer requirements and contracts***

The Company shall review orders, contracts or tenders to ensure that:

- The requirements are adequately defined for each installation for quantity, packaging, delivery etc.

- The Company has the resource and capability to meet the order/ contract requirements. Where the time scales cannot be met, the Company shall detail when the order/contract will be fulfilled.

Records of this activity shall be maintained for all orders/contracts and tenders.

A process shall also exist for managing amendments to contracts/ orders.

The company shall have a process for ensuring relevant planning and building control requirements are addressed appropriately.

These requirements can be met with the inclusion of appropriate procedures within the QMS. Flowcharting has been suggested as one method for capturing these processes. For more detail refer to the section on flowcharts above.

Some terms such as packaging and delivery may be more appropriate in a manufacturing context but can apply where materials and equipment need to be delivered to site and stored suitably i.e. secure and protected from the weather or accidental damage.

Managing the company resources in order to fulfil contracts could depend on the availability of staff, cash flow or perhaps specialist equipment. A variety of software is available to assist with project management not all of which will be appropriate. Simple Gantt charts can be created in spread sheet packages (or on wall planners) and are widely used in construction projects. These can be used to chart the business activities as a whole or to look more closely at individual projects or the deployment of staff for instance.

For more details about Gantt charts and planning projects see the Open University unit 'Planning a project'[20]

7.	***Purchasing***

The Company shall identify his suppliers of designs, products and materials which are incorporated into the final installation, including packaging.

A master list of suppliers shall be established to identify their address, location, contact details and the service or products/materials supplied. The method for adding or removing suppliers and products/materials from the master list shall be established e.g. previous dealings/past history, product approval.

Purchase orders for materials shall clearly identify the part number, class, grade, species (timber), size, finish, trade name and any other details quoting (where necessary), tolerances or relevant installation standards.

This requirement will be met by suitable procedures within the QMS. Supplier lists and the details of key products will be a useful resource for the business. Removing unreliable suppliers from the approved list will give an additional layer of protection for consumers and maintaining product details/specifications will help to ensure that design calculations for installations are carried out using the correct data.

It is not anticipated that this should apply to small items or consumables.

[20] Open University, Unit B713_2 'Planning a project'
http://openlearn.open.ac.uk/mod/oucontent/view.php?id=397413&section=6.2

8.	***Review of product specification*** *Check that no changes have occurred that should have been notified to the Certification body.* It is important to note that the 'product' in this context is the business itself, although this may not be clear from a first reading of the clause. On this basis, anything that affects the way the business operation as documented could be notifiable to the Certification body. Any significant changes such as a change in the structure or name of the business are required in writing at least 30 days in advance. For example, if an important member of staff leaves the business, a replacement may be required or the tasks and responsibilities defined in procedures may have to be redistributed to others. Alternatively if switching to a new supplier it may be necessary to consider whether the new products are equivalent or compatible with existing ones. There may also be implications for calculations or other aspects of the procedures which describe the installation design. If in doubt as to whether a change requires notification you should always contact your Certification Body.
9.	***Action on non-conforming material*** *The Company shall document procedures to ensure that any material which is deemed to be non-conforming, has been adequately identified (including by physical location), such that it is prevented from unintended use or packaged with conforming material. The procedures shall identify the actions necessary for the non-conforming material to be scrapped, re-worked or re-graded including labelling and authorisation requirements.* This language in this clause is more suited to a manufacturing context but could be seen to apply in a range of other environments such as out of date documents, calculations or project specifications. Faulty or out of specification equipment or materials could also be considered under this clause. The QMS will therefore need to define procedures for dealing with these.
10.	***Inspection and in process testing*** *All stages of the Installation, inspection and testing is required to be carried out under controlled conditions and shall include:* *Incoming inspection - All products and materials are checked to ensure that the correct product/material has been supplied and the quantities are correct. Any critical measurements should be identified and inspection records exist including a statement of acceptance or rejection of products/materials and the basis for this decision.* *In Process and Final Inspection – Installations shall be inspected in process and at final inspection to ensure that the requirements of the standards or specifications are met.* *The Company shall have processes to ensure that all notifiable work under the building regulations have been appropriately notified and managed.* The QMS procedures which define the installation process may include checklists at appropriate stages during the installation. These may be highlighted on the flowcharts so that they are done in the right order. For example checking measurements and calculations before proceeding to system design and quotations or checking delivery notes to ensure that materials delivered match those required before proceeding with the installation.

11.	***Equipment*** *The Company shall ensure that suitable equipment exists for the control and measurement of the installations and that it is calibrated and labelled to indicate its calibration status. A record shall be kept of all equipment, which is used by the Company. The record shall include the serial number or number allocated by the Company, scale and frequency of checking/calibration along with suitable objective evidence to demonstrate that the equipment is capable of the accuracy which is required for the specified measurements.* While this clause says that a record of all equipment is required it is not expected that this should extend to hand tools and the like. However any equipment that requires testing or calibration in order to maintain its safety of accuracy will need to be held in an inventory so that expiry and renewal dates can be checked. Equipment manuals (often available in electronic format) should give details of the range, accuracy or tolerance that can be expected.
12.	***Storage, handling, packaging and transportation*** *The Company shall carry out under controlled conditions storage, handling, packaging, and transportation of the products to prevent damage or deterioration.* Materials need to be stored sensibly to avoid damage either in transit or on site. Security may also need to be considered.
13.	***Certification Marks*** *The use of the appropriate Mark on the product/installation and on any stationery will be reviewed to ensure that approval has been granted by the Certification body for the intended use.* The MCS Logo is available in colour, black on white, white on black and greyscale. In some circumstances the MCS Logo can be used in the predominant colour of the background if this is deemed as suitable and does not compromise the logo in any way. All such requests must be submitted to mcs@gemserv.com. A document giving guidance on the correct use of the MCS logo is available in the 'MCS Brand Guidelines' on the MCS website.[21]
14.	***Records*** *Records related to installation and inspection must be kept by the Company for a minimum of two years, subsequent to their examination and approval.* *Contract related records must as a minimum contain details of customer reference, dates, quantities and details of all installations supplied. The Company must keep these records for a minimum of five years.* The record keeping element of the requirements will be easier to manage if the original QMS is kept simple. Avoiding repetition will reduce the number of records that are required and will produce a more streamlined system that better reflects the business activities.
15.	***Complaints*** *The Company shall manage complaints under controlled conditions and shall keep a log /register of any complaints received and the corrective and preventative actions taken to satisfy the complaint and where necessary the complainant. All complaints must be dealt with in a timely and effective manner.* Procedures for complaints will have to conform to the REAL Assurance Consumer Code which all businesses must sign up to in order to become MCS accredited. More details on this scheme are given in Appendix IV. Particular guarantees are given including following up all complaints as soon as possible and no later than 20 days after the complaint has been made (24hrs if the customer is without heating or hot water). REAL also provides conciliation if disputes need to be escalated.

[21] MCS, *The Certification Mark for Onsite Sustainable Energy Technologies*, Revision 3, August 2009 http://www.microgenerationcertification.org/admin/documents/MCS%20Brand%20Guidelines%20Revision%203.pdf

16.	***Corrective / preventive action*** *The Company shall have procedures for corrective and preventive actions.* This clause underlines the importance of trying to avoid mistakes in the first instance rather than just being good at sorting out problems. It applies across all elements of the business activity and can be achieved through designing efficient procedures that include checks along the way. The ability to modify or adapt procedures to prevent problems reoccurring is seen as particularly important.
17.	***Training and competence*** *All staff employed in installation activities must have received adequate training in each of the areas/operations in which they are involved. The Company must have a training record for each employee which details methods of training and approved areas of operation. These should identify the training authority and be signed by the employee as well as the training authority.* This information will be included in staff files and should include renewal dates for certificates and training where appropriate.
18.	***Health and safety*** *The company must have a health and safety policies and procedures to ensure all installations are conducted safely.* All employers are responsible for health and safety in their businesses. Taking precautions to reduce the risks associated with dangers in the workplace and will provide a safe working environment for everyone. Like the QMS, a health and safety policy should not be considered as too onerous and will reflect the nature of the work you undertake. The Health and Safety Executive (HSE)[22] provide a lot of information and advice including the guide 'Health and Safety Made Simple'[23] which contains notes on good practice and provides examples of how to prepare a Risk Assessment. For construction specific information see 'Health and Safety in Construction'[24] which gives a more detailed overview of requirements including work on larger sites.
19.	***Audit testing*** *Where requested, the Company shall provide details of recent or current installations as required by the Certification body. The contractor shall arrange access to installations selected by the assessor.* These will be used as the basis for the site based assessment.

Appendix IV

The REAL Assurance Scheme

In order to become MCS certificated all members are required to sign up to an Office of Fair Trading Scheme. This is a Code of Practice that meets the guidelines set by the Office of Fair Trading (OFT) Consumer Code Approval. By signing up to a Code of Practice you are giving a legal undertaking that you will follow the Code.

Currently the only scheme available is the REAL Assurance Scheme[25] which is provided by the (Renewable Energy Association (REA). A summary of the membership fees for this scheme is given in Table 4.

Number of employees	**Annual fee***
1 - 6	£220

[22] Health and Safety Executive, http://www.hse.gov.uk/index.htm
[23] HSE, *Health and Safety Made Simple- the basics for your business*, 2011, http://www.hse.gov.uk/pubns/indg449.pdf
[24] HSE, *Health and Safety in Construction*, 2006, http://www.hse.gov.uk/pubns/priced/hsg150.pdf
[25] REAL Assurance Scheme, http://www.realassurance.org.uk/

7 - 25	£450
26 - 50	£680
51 - 250	£2,150
Over 251	£4,350

**fees are levied on a pro rata basis if a member joins part way through the year*

Table 4. REAL Assurance Scheme membership fees

Membership demonstrates a commitment to offer high levels of service, to abide by fair practices and offer a clearly defined method for handling complaints. The Code covers all activities from the first engagement with a customer until the completion of the contract including warranty. The main section headings of the Code cover the following:

- General business standards
- Pre-sale activities – advertising and behaviour of sales representatives
- Contracts – terms, deposits, timescales
- Completing the order – design, delivery , commissioning
- After-sale activities – guarantees, fuel supply (biomass), servicing and maintenance
- Problems – complaints and conciliation

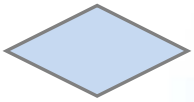
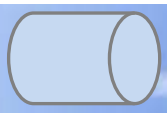
The Real Assurance Scheme Consumer Code is available on the company website online and in pdf format at: http://www.realassurance.org.uk/pdf/consumer-code.pdf

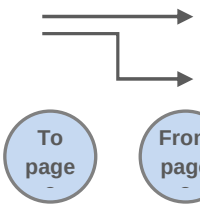
The Code also requires that any deposits taken should not exceed 25% of the value of the contact and are held in third party or 'Client Accounts'. These are offered by most banks and keep consumers' money separate from that of the business. This is to protect the consumer in the event that the business fails before the contract is completed. REAL has its own Deposit and Advance Payment Insurance Scheme full details of which can be found in this document: http://www.realassurance.org.uk/pdf/insurance-information.pdf

The members section of the website contains a selection of guidance documents on how to present performance estimates, consumers' rights and how to identify and treat vulnerable customers as well as a selection of model documents including contract, quotation, warranty and cancellation form. For more details please see http://www.realassurance.org.uk/members

Appendix V

Common flowchart symbols

Symbol	Use	Symbol	Use
	Terminator *Start or stop point in a process*		Document
	Process *An operation or action*		Manual input
	Decision *One input , 'yes' or 'no' output*		Stored data
	Data *Input and output from a process*		Direct access storage *Computer hard drive*



Connectors

Arrow gives flow direction

Connectors

Jump to another page

Sub routine

A predefined process

Summing junction

Multiple inputs –single output