

Renewables Obligation (RO)

www.ofgem.gov.uk/ro

How to complete your anaerobic digestion (AD) Fuel Measurement and Sampling questionnaire

Introduction

Submitting a fuel measurement and sampling (FMS) questionnaire and getting it approved forms part of the Renewables Obligation (RO) accreditation process for fuelled generating stations. In your questionnaire, you need to explain the procedures used to measure and sample the fuels used to generate your station's gross output. We can't accredit your station unless these FMS procedures are approved.

We can only issue Renewables Obligation Certificates (ROCs) for electricity generated by renewable sources. Your FMS procedures will produce data that will let us work out how much of the fuel used to generate electricity comes from renewables. They will also let you meet sustainability reporting requirements for biomass fuels.

The following guidance will help you better understand the scheme requirements:

- [Renewables Obligation: Fuel Measurement and Sampling](#)
- [Renewables Obligation: Sustainability Criteria](#)
- [Renewables Obligation: Sustainability Reporting](#)
- [Renewables Obligation: Guidance for Generators](#)

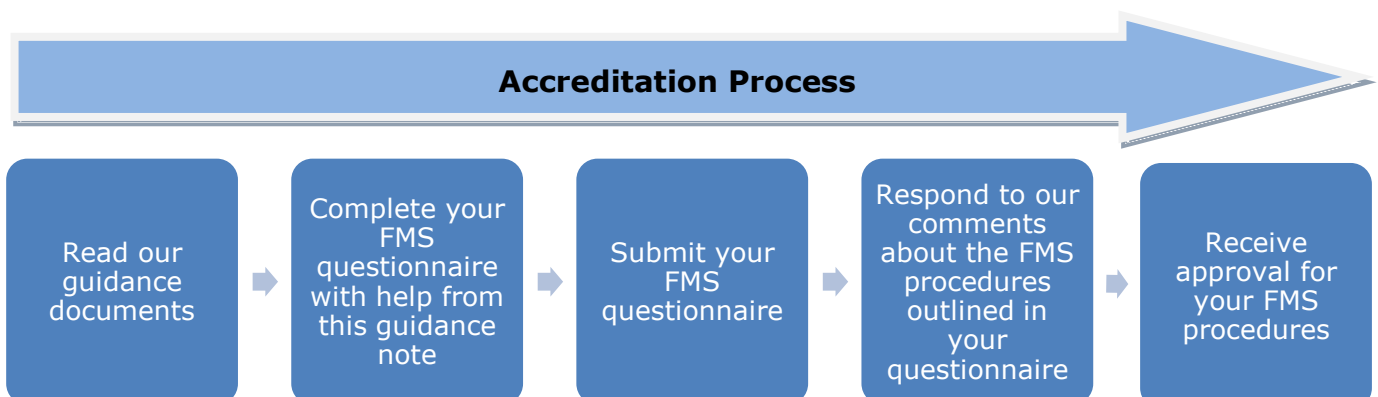
If you have any questions while you're completing your FMS questionnaire, please get in touch on **0207 901 7310** and ask for a member of the Fuelling and Sustainability team.

How will this guidance note help me complete my FMS questionnaire?

Some parts of the questionnaire are simple, but others will need some more consideration. This guidance note tells you what information we need so we can determine whether your procedures meet the scheme requirements.


By reading this note whilst you complete your FMS questionnaire, your submission will be more thorough. This will help reduce the time you spend on the accreditation process.

If you are still considering options for measuring and sampling your fuels, there is further information about this in **appendices 6-10** of the [FMS Guidance](#).



Completing and submitting the questionnaire

When completing the questionnaire, make sure you explain how you will undertake your procedures thoroughly. The larger the response text box, the the more detailed we expect your answer to be. There is extra space for your answers in **Section J** if you need it. You can also submit additional documents, as long as you refer to them clearly in the questionnaire.

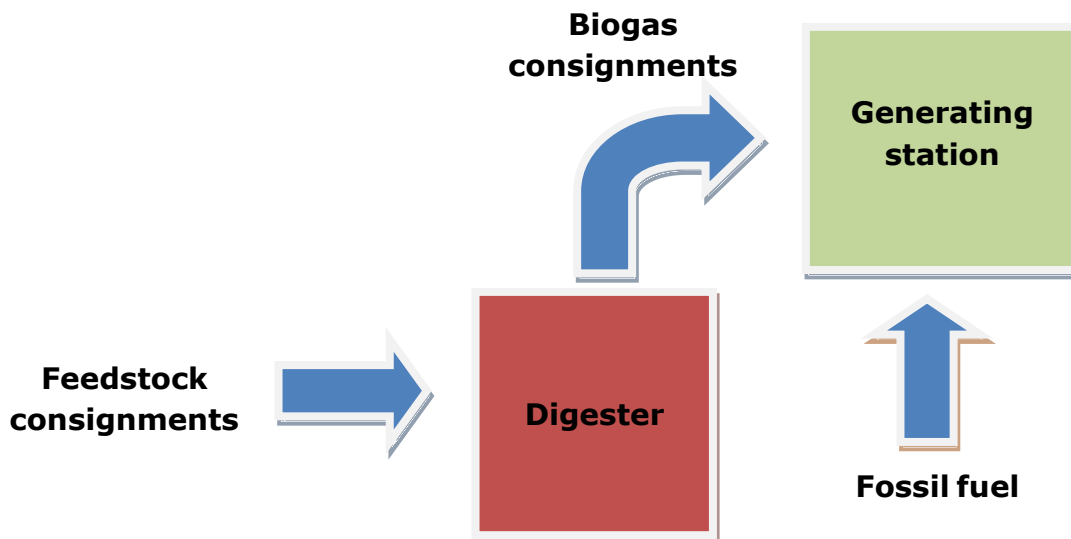
Compulsory questions are marked with a  symbol. Other questions are only relevant to some generating stations. If a question is not relevant, answer N/A.

You should submit your FMS questionnaire and any supporting information with your application on the Register, and also send it to fuellingandsustainability@ofgem.gov.uk. We will get back to you with initial comments about your procedures when we have reviewed your questionnaire.

From this point forward, you can submit updated versions directly to the member of the Fuelling and Sustainability team dealing with your FMS procedures by email. Although the FMS and accreditation reviews run in parallel, these tend to be dealt with by different members of the team.

Fuelling information needed for AD stations

The diagram below shows the various inputs associated with the AD process that are relevant to your FMS procedures.



To determine your station's RO eligible renewable output, we need to know the **quantity** and **Gross Calorific Value (GCV)** of the **biogas** and any **fossil fuel**, used to generate its gross output.

If your station is **≥1MW** and uses more than feedstock consignment then you will need to measure the quantity of each of these consignments so you can report against the sustainability criteria. A consignment is a term used in the RO Orders, which we explain in Chapter 6 of our [Sustainability Criteria Guidance](#).

Which sections of the questionnaire should I complete?

Depending on the size of station and the type of fuel used, you may only need to complete certain sections in accordance with table 1 below:

Station size and number of consignments	FMS questionnaire section										
	A	B	C	D	E	F	G	H	I	J	K
DNC ¹ of ≤50kW	✓	✓	✗	✗	✗	✗	✓	✓	✓	✓	✓
DNC of >50kW and a TIC ² of <1MW	✓	✓	✗	✗	✗	✗	✓	✓	✓	✓	✓
≥1MW and <u>only one</u> feedstock consignment	✓	✓	✓	✓	✗	✗	✓	✓	✓	✓	✓
≥1MW and <u>more than one</u> feedstock consignment	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 1 – which sections of the questionnaire should I complete?

¹ Declared net capacity

² Total installed capacity

How to complete your AD FMS questionnaire

The questions in **Sections A** (Applicant Information), **B** (Version History) and **C** (Fuel Classification) are self-explanatory. Information on completing the questionnaire from **Section D** onwards is below:

Section D – Consignment assessment and tracking sustainability information

What does the section do?

The RO Orders require operators of generating stations to report against the sustainability criteria of biogas on a consignment basis. To do this, **Section D** asks you to:

- Assess the consignments of feedstock that make up your biogas
- Determine whether you are using single or multiple consignments
- Determine whether consignments are mixed

If consignments mix, either offsite or onsite, you will need to work out how much of each consignment is used.

For more information on how to do this, see Chapter 6 of our [Sustainability Criteria Guidance](#).

Tips for completing the section

If you're not yet familiar with what a consignment of biomass is, then Chapter 6 of our [Sustainability Criteria Guidance](#) will help you to understand. We need you to group the feedstock that make up your biogas into consignments, by looking at their sustainability characteristics. For AD stations, sustainability characteristics are passed from the feedstock to the biogas.

This can be a tricky area and it's important to get right as it forms the basis for your FMS procedures. If you need any help with this whilst you're completing your FMS questionnaire, then please get in touch on **0207 901 7310** and ask for a member of the Fuelling and Sustainability team.

When putting together your answers for **Section D**, please keep in mind these other top tips for certain questions:

D1 – To avoid confusion, make sure you clearly show how any feedstock specified in **Section A** are grouped into consignments, eg maize silage and grass silage = silage consignment.

D7 - When explaining how you will use a mass-balance system, ensure you have covered the following for each mixed feedstock consignment:

- Where in the supply chain and/or generating station the method will be used
 - For consignments that are mixed in the supply chain, explain what information the supplier can provide to show the proportion of consignments in the mixture, and indicate how this will be presented in the supporting documents (eg spreadsheet or supplier declaration on consignment proportions).
 - For consignments mixed at the generating station, explain exactly where the mixing occurs eg storage tanks, feedstock clamps.
- Which consignments the mass balance will apply to
 - The explanation should only cover the mixed consignments, and does not need to cover consignments that are physically separate and measured just prior to digestion.
- How you will use the system to determine the quantity of each consignment used in the month of claim
 - Clearly explain how a proportionate or non-proportionate system is applied to the data produced by your quantity procedures outlined in **Section E**. It is useful if you state any calculations you intend to use, including the key input values eg (opening stock X percentage consignment A), plus deliveries of consignment A, minus (closing stock X percentage consignment A).
 - Ensure that your answer builds on, rather than duplicates, the information you will provide about the quantity of feedstock consignments used in **Section E**.
 - Your supporting information spreadsheet should clearly show the formulae that are used as part of the mass balance system and indicate how input values have been measured.

Section E – Determining the quantity of feedstock used

What does the section do?

If you are using more than one feedstock consignment, you will need to work out how much biogas each of these produces so you can report per consignment of biogas. Whether you use the Ofgem biogas apportioning tool or your own method to do this (see **Section F**), you will need to determine the quantity of each feedstock consignment used in a month as one of the key input values for your method of choice.

Tips for completing the section

When putting together your answers for **Section E**, please keep in mind that:

- The answers in **Section E** should complement, not duplicate, those in D7 regarding your mass balance system.
- The answers to this section should provide a complete explanation of how you determine the quantity of each feedstock consignment used in a month. This should clearly distinguish if some consignments are measured differently to others.
- It is critical that you ensure the wording of your answer allows us to understand which feedstock consignments are being measured, by what pieces of equipment, and whether they are measured before or after mixing. This allows us to understand how you have derived the input values for your mass balance system.
- Even if you are measuring the quantity of consignments just before digestion with a cumulative measuring device, such as a flow meter, then you may still need to consider carryover onsite if this information is needed as part of your mass balance system.
- If measurements are made prior to depackaging, then the quantity of removed packaging should be deducted from the overall quantity of the relevant consignment.
- We understand that some feedstock fed to the digester in the current month will be digested the month after. For convenience, we assume that all feedstock fed to the digester in the month is also digested in the the same month.

Section F – Apportioning the biogas according to the feedstock used

What does the section do?

In order to report per consignment of biogas, you will need to determine the contribution of each feedstock consignment to the biogas used by the station. If you are using more than one consignment, our biogas apportioning tool will allow you to determine the quantity of biogas that comes from each feedstock consignment. You are also free to propose your own method, whether this be by direct measurement and sampling or another approach. Once we have reviewed your FMS procedures, we will decide whether you need to use the apportioning tool, and if appropriate send it to you with any comments on your FMS procedures in an email.

Tips for completing the section

When putting together your answers for **Section F**, please keep in mind that:

- If you are overwriting default values in the apportioning tool, or using your own method and data to determine the quantity of biogas derived from each feedstock consignment, ensure you provide evidence for where you have sourced any key input values eg (moisture content, biogas yield). This could be in the form of lab results, literature values, or based on your own judgement.

Section G – Fossil fuel use

What does the section do?

To determine your station's RO eligible renewable output, we need to know the quantity and GCV of fossil fuel used each month. The section asks about the procedures that you will use to measure the quantity and sample the GCV of fossil fuel used to generate electricity.

Tips for completing the section

If you need to explain how you will determine the quantity and GCV of fossil fuel used to generate electricity in a month, ensure you have covered the following:

- The equipment you use to measure the fossil fuel, including its accuracy (+/-%)
- How you distinguish between fossil fuel that does/does not generate electricity
- If applicable, how you account for any carryover from one month to the next
- An explanation of the sampling regime or information used (eg supplier invoices) to determine the GCV

Section H – Determining the GCV of the biogas

What does the section do?

To determine your station's RO eligible renewable output, we need to know the GCV of biogas used each month. The section asks about the procedures that you will use to sample the GCV of biogas used to generate electricity.

Tips for completing the section

When putting together your answers for **Section H**, please keep in mind that:

- It is important for you to report the volume and GCV of biogas at the same temperature and pressure conditions. If you are multiplying out the standard GCV of methane (provided at Standard Temperature and Pressure, or STP), against a measured methane content percentage, then you also need to determine the quantity of your biogas at STP.
- If you are back-calculating the GCV of your biogas, then lay out the calculation you use, and clearly specify any key input values such as engine efficiency, kWh output, biogas volume etc.

Section I – Determining the volume of biogas used

What does the section do?

To determine your station's RO eligible renewable output, we need to know the quantity of biogas used each month. The section asks about the procedures that you will use to measure the quantity of biogas used to generate electricity.

Tips for completing the section

When putting together your answers for **Section I**, please keep in mind that:

- You should refer to the equipment used to determine the volume of biogas and its accuracy.
- If you are back-calculating the volume of your biogas then lay out the calculation you use, and clearly specify any key input values eg engine efficiency, kWh output, biogas GCV etc.

Supporting information

Supporting information submitted alongside your FMS questionnaire helps us get a better understanding of your station's FMS procedures. You should include these documents as part of your initial submission. Some examples of supporting documentation relevant to your FMS procedures are:

- A process flow diagram outlining the proposed FMS procedures, paying particular attention to key measurement and sampling locations
- Technical specifications for equipment, eg gas analyser, weighing device specifications
- Procedure/instruction sheet to illustrate how measurement/sampling is done

During the FMS review process we also agree whether you should submit supporting information each month to help verify the data submitted on the Register. You should put together an example of the supporting information you will submit as part of the initial submission of your FMS procedures. Some examples of this include:

- Laboratory certificates showing any test results relevant to the procedures. This could include glycerol specification sheets showing a MONG percentage, or moisture and biogas yield results for use in the biogas apportioning tool.
- The biogas apportioning tool updated to include any data on the quantity of feedstock used, and any calculations undertaken as part of the mass balance system.

Checklist

Incomplete or contradictory information in the FMS questionnaire and supporting information can delay the review process. Use the following checklist to ensure the review will proceed smoothly:

Before submitting FMS procedures for review:

- Read the relevant sections of our RO guidance documents
- Decide who will represent the generating station and complete the FMS documents during the review process. Set this individual up as a named user on the Register account
- Read and complete the FMS questionnaire using this guidance document to ensure you have set out the relevant information as thoroughly as possible
- Get in touch with us to discuss any questions

During the review process:

- Ensure all FMS documentation is submitted for review alongside an application for accreditation
- Ensure all comments raised during our review are fully addressed, and the FMS documentation updated accordingly before each re-submission

After FMS approval:

- Read your FMS approval e-mail
- Set-up the relevant fuel(s) on the Register for use in data submissions.
- Carry out FMS procedures as per agreement with Ofgem.