

GUIDANCE NOTE 3(S) (SIMPLE)

SELF ASSESSMENT OF PROPOSED NEW AND UPGRADED CHP SCHEMES (DESIGN SUBMISSION) – SIMPLE SCHEMES

GN3(S).1

The Simple Scheme Design Submission journey, to which this Guidance Note relates, is only to be used for proposed New and Upgraded reciprocating engine CHP Schemes that:

- will be ≤ 2 MWe CHP_{TPC} in size
- will use a single conventional fuel e.g. natural gas, diesel
- will include a single prime mover, together with associated heat recovery equipment, within the Scheme boundary
- will not include heat only boilers
- will meet the Threshold Criteria for Good Quality CHP at the design, specification, tendering and approval stages
- will meet a projected power efficiency of 20% or more.

In all other circumstances, the Complex Scheme Design Submission journey must be followed for the Self- Assessment of New and Upgraded CHP Schemes.

This journey is intended for applicants that will have one or more Schemes (on the same site) that individually have a total capacity not exceeding 2 MWe. To follow this journey, the Responsible Person must complete a separate submission for each Scheme. However, if the CHP Units are technically linked through a common heat header (i.e. a single Scheme), then this simple journey is not applicable and the complex journey must be followed.

INTRODUCTION

GN3(S).2

The purpose of the Design Submission is to provide a description and Self-Assessment of a new or upgraded CHP Scheme that is based on a single prime mover with a rated electrical output (TPC) of ≤ 2 MWe. The Self-Assessment will be used to confirm that the CHP Scheme meets the Threshold Criteria for Good Quality CHP. The Design submission requires information under the following main headings:

1. Scheme Identification
2. Basic Information
3. Site/Consumer Energy Demands
4. Scheme Equipment Details
5. Scheme Monitoring Arrangements
6. Energy Inputs

7. Power Outputs
8. Useful Heat Outputs
9. Declaration

PROCEDURE

GN3(S).3

For a completely new Scheme, registration of the User and the Scheme with the CHPQA programme must have been completed (see Guidance Note 1). Following registration, a Design Submission must be completed by the Responsible Person to provide details of the Scheme and to undertake the Self-Assessment. The information provided will be validated by the CHPQA Administrator and forms the basis on which the initial CHPQA Certificate is issued. CHPQA Certification of new Schemes will be used by Government to assess eligibility for available benefits.

Like CHPQA Certificates for existing Schemes, Certificates for Schemes in design, development or construction stages must be renewed annually each January until the Scheme has entered Initial Operation. Each year, it is necessary to provide details of any changes to the design or anticipated operating conditions from those provided for a previous year.

An Operational Submission must be made in the first January following the year of commencement of Initial Operation. Initial Operation is considered to have commenced in a year if the scheme operated for at least one month of data in CHP mode in that year.

GN3(S).4

The following paragraphs describe each Section of the journey, referring where appropriate to other Guidance Notes.

Basic Information

GN3(S).5

Select the economic sector of the site on which the Scheme is located. For example, Public Administration – Health, etc. In certain circumstances, the CHP Scheme will be replacing a previous installation, for example, where the original CHP Scheme has come to the end of its useful life. Indicate in the space provided whether or not this is the case.

The general description of the Scheme should include reference to issues such as ownership, operation and maintenance arrangements, normal running hours, anticipated typical operation and uses of the heat and power outputs.

If there is not sufficient space available for the general description, please provide the information as a separate numbered attachment and refer to this in the submission.

An indication is also required of the state of development of the proposed Scheme and likely dates for the key milestones of (a) start of installation, (b) start of commissioning and (c) the start of Initial Operation.

- Refer to GN10.17 for guidance on Initial Operation.

Scheme Equipment Details

GN3(S).6

Provide the requested details of the CHP unit upon which the CHP Scheme is based.

As a source of information, the CHP unit may be listed on the CHPQA CHP Unit list (available at <https://www.gov.uk/guidance/chpqa-guidance-notes>). Information is provided on the CHPQA CHP Unit list about the manufacturer, Model, Engine Type, Qualifying Heat Capacity and Total Power Capacity. This list allows RPs of Schemes with small engines (≤ 500 kW_e) to check their performance against the design performance of the units and under specified conditions allows their fuel input and/or heat output to be estimated. However, it is not a list of approved or certified CHP units, and it is not a means of gaining type approval.

Further information on the Scheme is required in the form of a diagram showing the CHP Scheme and its relationship to the site as a whole. This CHP Scheme Energy Flow diagram must be marked to show typical flow rates, heat outputs and electrical (and mechanical) power outputs. Generic Scheme Energy Flow Diagrams are available in GN12.2 - when using these please select the diagram most closely representing your Scheme and complete with the missing details.

Scheme Monitoring Arrangements

GN3(S).7

This section requires information on all installed and proposed metering equipment that will be used to monitor the performance of the CHP Scheme.

Information on the Main Network (e.g. National Gas) meter through which the CHP Scheme is supplied must be provided, including the Meter Point Reference Number (MPRN) for this meter.

Information on the Gas Input meter to the CHP must also be provided (this meter would most likely be a sub-meter of the main network meter).

Schemes with no heat rejection facilities and which are based on units listed on the CHPQA CHP Unit list (see <https://www.gov.uk/guidance/chpqa-guidance-notes>) can estimate the gas usage of the CHP in Initial or Annual Operation (following specified procedures). For these Schemes, gas metering is not a necessity but may be included as best practice for the site's own monitoring requirements.

Information on the CHP electricity output meter (Labelled as M3(EQ)) must also be provided.

- Refer to GN12.3 & 12.7 for guidance on monitoring arrangements.
- Refer to GN13 for guidance on CHP Scheme monitoring.

Refer to GN14 to 16 for guidance on input/output metering requirements. Schemes with a heat rejection facility are required to monitor the annual heat supplied (i.e. heat usefully used by the site). CHPQA thus expects new and upgraded Schemes with heat rejection facilities to include provision for monitoring heat supplied to site. Subject to agreement with CHPQA, monitoring systems could be integrated as part of remote monitoring systems.

- See CHPQA GN13 (section 13.11) and GN16 (sections 16.12-16.19) for further advice

Energy Inputs

GN3(S).8

The fuel energy input must be identified by fuel type e.g. gas etc. (see GN14.2 for list).

The estimated annual fuel energy input (in MWh) based on gross calorific value (higher calorific value) must be provided for the first year of operation.

For Schemes based on CHP units on the CHPQA CHP Unit list, the CHP Total Fuel Input should equate to the estimated Total Power Output (based on expected operating hours during the reporting period) divided by the Power Efficiency given on the Unit list (<https://www.gov.uk/guidance/chpqa-guidance-notes>).

Power Outputs

GN3(S).9

Estimate CHP Total Power Output (CHP_{TPO}) for the first year of operation based on expected hours of operation and load factors.

The power output is the gross amount generated i.e. at the generator terminals

- Refer to GN15 for further details.

Useful Heat Outputs

GN3(S).10

Useful heat is heat output that is demonstrably utilised to displace heat that would otherwise be supplied from other sources. Useful heat can be estimated based on the CHP unit heat to power ratio obtained from the manufacturer's specification sheet or, where appropriate, from the CHP Unit List.

In all cases:

- Refer to GN13 for guidance on CHP Scheme Monitoring.
- Refer to GN16 for guidance on CHP Scheme Heat Outputs.

The submission journey directs the Applicant to different questions depending on whether or not the Scheme will have a heat rejection facility.

Small-scale CHP Schemes with NO heat rejection facility must monitor fuel input (apart from those identified above) and power output. A clear statement that the heat output is to be used on site must be provided and an estimate of the heat output supplied to site must be given.

Small-scale CHP Schemes WITH heat rejection facilities must monitor fuel input (apart from those identified above), power output and useful heat supplied to site. A clear statement of the site heat demands and heat production and distribution systems must be provided and an estimate of the heat output supplied to site must be given.

CHP Scheme Efficiencies

GN3(S).11

The Responsible Person should calculate CHP Scheme Heat and Power Efficiencies using the annual data recorded in Part 2. For Schemes based on certain CHP units less than 500kW_e CHP_{TPC} (as identified in section 5 above) the Power Efficiency agreed between CHPQA and the Supplier/manufacturer may be used.

Threshold Power Efficiency

GN3(S).12

A CHP Scheme must achieve the relevant Threshold Power Efficiency for all fuels used to be considered an input to Good Quality CHP. The threshold is set at 20% for Schemes covered by this Guidance Note.

If the threshold value is met or exceeded, all of the fuel inputs qualify as an input to Good Quality CHP.

If the threshold value is not met or exceeded the Responsible Person will have to complete the Complex Scheme Design Submission journey in order to attain Certification.

Quality Index

GN3(S).13

The Quality Index for the Scheme is calculated using the Heat and Power Efficiencies and the appropriate X and Y values from the applicable Issue of the CHPQA Standard.

If the Quality Index is less than 105, the Responsible Person will have to complete the Complex Scheme Design Submission journey in order to attain Certification.

Declaration

GN3(S).14

The declaration is a statement by the Responsible Person confirming the validity of the information provided based on the CHPQA Standard. Responsible Persons should note that for the purposes of resolving queries that arise on the details submitted, arranging an Audit and for ensuring eligibility for benefits, contact will be with the Responsible Person.