



ISCC 201 / Biogas Plant

Additional System Basics

**for the certification of gaseous biofuels produced in
biogas plants**

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Additional System Basics for the certification of sustainable gaseous biofuels produced in biogas plants

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1 Introduction

The European Commission formulated binding sustainability requirements for the energetic use of biomass in the directive 2009/28/EC. This Renewables Directive was transposed into national law through the Biomassestrom-Nachhaltigkeitsverordnung [Biomass Electricity Sustainability Ordinance] (BioSt-NachV) and the Biokraftstoff-Nachhaltigkeitsverordnung [Biofuel Sustainability Ordinance] (Biokraft-NachV). They introduced binding sustainability criteria for liquid and gaseous biofuels as well as for liquid fuels, including biomethane processed to natural gas quality that is used in the mobile field.

The binding requirements apply to all elements of the value chain (farms/plantations, first gathering points, warehouses, suppliers, transports, biogas plants (which may also be first gathering points, as the case may be) and biogas processing plants (BPP).

To prove the implementation of these requirements, the companies involved undertake to comply with the regulations of recognised certification systems. ISCC is such a certification system.

2 Scope

This document comprises additional requirements for all elements of the value chain for the production of biomethane. The specific criteria described complement the system basics described in the ISCC document 201 and generally apply to all relevant elements of the value chain.

The following documents must be taken into account as well for the certification of biogas plants:

	No.	Name	Content
Technical documents	201	System Basics	This document describes the basic functions and processes of the ISCC system. A more detailed description of the contents can be found in further documents.
	202	Sustainability Requirements – Requirements for the Production of Biomass (crop cultivation)	The sustainability requirements specify the standards for sustainable crop cultivation
	202-02	Self declaration of EU farms of their compliance with the ISCC sustainability requirements	
	203	Requirements for	The listed requirements allow for the traceability of the biomass.

	No.	Name	Content
		Traceability	The data that must be declared at the individual elements in the supply chain is named
	204	Mass Balance Calculation	The detailed traceability of the biomass within individual production sites is possible by way of a mass balance methodology which is described in this document
	205	GHG Emission Calculation Methodology and GHG Audit	This document describes the detailed calculation methodology for greenhouse gas emissions and defines for certification bodies how to audit the requirements
	300	Country-specific Notes and Guidelines	Country-specific information in particular for the preparation of the audit and for the assessment of country-specific risks
Reference documents	401	Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC	The directive describes, among other things, the legal requirements in the EU as to the production of sustainable biomass and bioliquids
	402	Ordinance on Requirements Pertaining to Sustainable Production of Biofuels (Biokraftstoff-Nachhaltigkeitsverordnung – Biokraft-NachV)	These ordinances nationally implement the Directive 2009/28/EC
	403	Ordinance on requirements pertaining to sustainable production of bioliquids for electricity production (Biomassestrom-Nachhaltigkeitsverordnung – BioSt-NachV)	

	No.	Name	Content
	404	Administrative regulation Biomassestrom-Nachhaltigkeitsverordnung (BioSt-NachVwV)	Administrative regulation for the recognition of certification systems and certification bodies according to the BioSt-NachV
	405	BLE-Guideline Sustainable Biomass production	Summary of information with respect to the sustainable production of biomass and the implementation of the legal requirements
		Biomethane as a fuel: a guidance on Biokraft-NachV for practice	Summary of information with respect to the certification of biomethane
		Biomass Ordinance	Ordinance on the production of electricity from biomass

Table 1: Relevant documents for the certification of gaseous biofuels produced in biogas plants

3 Normative references

In general, all applicable ISCC documents shall be considered relevant references for the scope of application in addition to the documents listed in chapter 2.

4 Certification

4.1 Certification of biogas plants

4.1.1 Fundamentals

The certification criteria for biogas plants are composed of the following items:

- (1) farms / plantations
- (2) biogas plants as first gathering points
- (3) biogas plant and biogas processing plants as last interface
- (4) mass balancing
- (5) issue of Proofs of Sustainability

4.1.2 Farms / plantations

The requirements regarding the sustainable production of biomass are described in detail in the ISCC document 202 (Sustainability Requirements – Requirements for the Production of Biomass (crop cultivation)).

The farm must provide the data for the cultivation of biomass required for the calculation of GHG emissions and disclose them to their customers. At present, there are no standard values in Biokraft-NachV and no NUTS2 values for the cultivation of substrates (e.g. maize silage) that are used for the production of biogas either. The farm must collect the relevant data or calculate GHG emissions individually. The ISCC document 205 (GHG Emission Calculation Methodology and GHG Audit) describes the relevant data and the calculation methodology.

4.1.3 Biogas plant as first gathering point

Biogas plants may also be first gathering points of sustainable biomass (substrates) at the same time. In the context of the ISCC system, first gathering points are companies that first receive the biomass required for the production of biofuels from companies or sites that produce or harvest this biomass in order to trade in this raw material (section 2 paragraph 3 no. 1 Biokraft-NachV). It is relevant for the certification of these plants that the weight, the origin (production site), the dry substance content and the value of GHG emissions stated by the production site are documented for the incoming biomass (substrates). The self-declarations made by the production sites as well as the supply contracts for biomass (substrates) must be kept as proof of the biomass. Deliveries with different GHG values must always be stored separately. Silage losses occurring during the storage of the substrate must be documented and explained.

4.1.4 Biogas plant and biogas processing plants as last interface

4.1.4.1 Definitions

Biogas plants are conversion plants that produce (raw) biogas from substrates (biomass). Biogas processing plants process (raw) biogas to biomethane. The processed biomethane then has the quality of natural gas and is thus the ready-to-use fuel. Biogas processing plants are always the last interface. Both biogas plants and biogas processing plants must undergo certification. When biogas plants and a biogas processing plant belong to the same site, a single certification referring to both plants is sufficient.

4.1.4.2 Fundamentals

The internal heat requirement of the biogas plant and of the biogas production plant must be proven. The heat energy used must demonstrably be provided from renewable sources without the use of additional fossil energy.

The substrate quantities introduced into the biogas plant and/or the fermenter must be documented using an operations diary and/or work diary. The information on the origin of the substrate, the dry substance content as well as the assigned GHG value must also be documented in this diary. Recording must be carried out as exactly as possible. It must be verified at least once per month that the substrate quantities supplied correspond to those used in the fermenter of the biogas plant.

Moreover, the biomethane yield of the entire plant must be documented in the operations diary. The biomethane yield must be measured at the biogas plant using standardised equipment or measured continuously by the biogas processing plant. The biomethane gas quantity produced and the substrate quantity used must be compared after three months at the latest.

The energy content of the produced biomethane must be calculated based on the non-condensing heating value (“Heizwert”).

4.1.4.3 Calculation of GHG emissions

The Biokraft-NachV has standard values for biogas from organic municipal waste and for biogas produced from liquid or dry manure for the calculation of GHG emissions. If an individual calculation of GHG emissions is required for biogas plants, they must have a gas-tight digestate storage tank and a dosing unit with weighing system. Methane losses must be taken into account when calculating the GHG reduction.

GHG values must only be aggregated when maximum values have been specified by law (see Biokraft-NachV). If aggregation is not possible, the GHG values must be calculated for every substrate used. The substrate quantities documented in the operations diary and the assigned GHG values must be taken into account for the calculation. The total biogas and/or biomethane yield will be split into the individual substrates. An exact allocation of substrate quantity and gas yield is not possible. The calculation is to be carried out in analogy with the procedure for the settlement of the EEG remuneration (see “Ordinance on the Production of Electricity from Biomass – BiomassV”). For example, methane yields (in m³ per ton of fresh

mass) can be found in the Biomass Ordinance (BiomasseV) or other scientific documents (e.g. KTBL values “Typical values for agriculture”).

Diffuse methane emissions from the fermentation process must be taken into account when calculating GHG emissions. Methane emissions amounting to 1% of the biomethane quantity produced are assumed. Lower values must be proven by corresponding measurements. Emissions occurring during the storage of digestate must be considered for the GHG calculation as well. An allocation of the emissions to digestate is not possible.

4.1.4.4 Biogas processing plant

The biogas processing plant must prove that the heat energy used comes from renewable sources. If heat is regenerated from the use of the biogas produced, the corresponding quantity of heat and the quantity of biogas used must be proven.

Biogas processing plants must measure their power consumption and take into account the methane slip for the GHG calculation. For doing so, it is sufficient to measure the actual methane slip, provide the manufacturer warranty or refer to scientifically accepted standard values. Plants that employ a procedure using pressure must retreat their exhaust air thermally.

Biogas processing plants are always the last interfaces. They must calculate the final GHG reduction potential of the biomethane. In order to do so, emissions from the downstream processing and transport of the biomethane must be considered as well. This includes the transport of the biomethane to the filling station as well as the compression to the pressure required by the filling station. Scientifically accepted standard values or individually measured values may be used. The transport of biomethane to the filling station can be carried out using the natural gas network. In this case, the natural gas network (pipelines) is considered to be the means of transport and not the warehouse.

4.1.5 Mass balancing

The mass balancing of biomass in the ISCC system is described in detail in document 204. In addition, the following requirements must be taken into account for the certification of biomethane produced by biogas plants.

The natural gas network can be used for the transport of biomethane. In this case, the natural gas network must meet the requirements as to a mass balancing system. The quantity of biomethane fed into and taken from the natural gas network must be documented stating the properties. The export of biomethane into the natural gas network must be recorded using a standardised export meter and documented (units: m³ or kWh). At the end of the respective balancing period, the quantity of biomethane taken from the natural gas network must not exceed the quantity of biomethane fed in before. To prove this fact, a company-internal database may be used that is subject to controls by the main customs offices. Moreover, documentation must be carried out using the Nabisy database. The documentation of mass balancing using the biogas register is not permissible. The balancing period must not exceed three months.

4.2 Generation of Proofs of Sustainability

The creation of Proofs of Sustainability is described in the document 206. The following requirements must be taken into account in addition for the certification of biomethane produced in biogas plants.

The biogas processing plant issues the Proof of Sustainability for the biomethane fed into the natural gas network. In the field of biomethane production, the “immediate” transmission of the Proof of Sustainability to the competent authority is not possible, since the settlement between the commercial partners is carried out using the energy content of the biomethane (in kWh) and not in m³ or kg. The energy content cannot be transmitted “immediately” since it is determined analytically and is generally only available 3 weeks after the end of the month. Thus, the Proof of Sustainability should be issued at this point in time. The Proof of Sustainability should be entered into the Nabisy system within 7 working days. Before the data are entered into the Nabisy, they must be converted according to the requirements of BLE [Federal Office for Agriculture and Food] (conversion factor 3.6 MJ/kWh).

No other Proofs but the Proofs of Sustainability prescribed by Biokraft-NachV and entered into / issued through the Nabisy system are accepted for mass balancing. A Proof and / or the documentation through the biogas register is/are neither permissible regarding the biofuel quota nor regarding a tax relief granted by the customs offices. A parallel documentation of business transactions in the Nabisy and in the biogas register is not permissible either as soon as Proofs of Sustainability have been issued for biomethane.