

TÜV SÜD Standard



Industrie Service

Certification of the generation of electricity from renewable sources

(Abbreviated as: Generation EE)

with

Generation EE+ module: Simultaneity

Generation EEnew module: New plants



TÜV SÜD CMS Standard 83

Version 07/2015

<p style="text-align: center;">TÜV SÜD CMS Standard 83 (Version 07/2015)</p> <p style="text-align: center;">Certification of the generation of electricity from renewable sources (Generation EE)</p>	 Industrie Service
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Change history

- 07/2013 Numerous clarifications throughout the standard.
Definition of new plants by calendar year.
VdTÜV Code of Practice 1304, 10/2014 edition used as basis.
Detailed accounting regulations.
Integration of general certification principles, including risk management, significance, confidence level.

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Terms and definitions

Renewable energy	Hydropower (pumped storage plants minus energy input for pumping operation), wind power, biomass, biogas, landfill gas, solar power/photovoltaics, geothermal power, biogenic content of household refuse and industrial waste.
Biomass	Energy carrier in accordance with the German Biomass Ordinance as amended at the time of certification.
Biogas	Gas defined as biogas in the currently applicable legislation: Biomethane, gas from biomass, landfill gas, sewage gas and hydrogen derived from the electrolysis of water and synthetically produced methane, provided the major part of the electricity used for electrolysis and the major part of the carbon dioxide or carbon monoxide used for methanisation are established as coming from renewable sources as defined in 2009/28/EC. ¹
Biomethane	Biogas purified to natural-gas quality and injected into the natural gas grid.
Net production	The net production is calculated from the amount of electricity fed into the grid minus the amount of power purchased from external sources to cover own energy demand including 100% of the energy input for pump operation of pumped storage hydro-electric power stations. Electricity is only considered as having been fed into the grid after it has been transformed to the level of voltage in the grid (TÜV SÜD net energy principle).
Service life	Period of time during which machinery, machine equipment, buildings and similar infrastructure meet their purpose of application.

Abbreviations

CMS	TÜV SÜD Industrie Service GmbH · Carbon Management Service
EEG	Act on the Revision of the Renewable Energy Sources Legislation in the Field of Electricity in the Federal Republic of Germany
EnWG	German Law on Electricity and Gas Supply (Energy Industry Act — EnWG)
GoO	Guarantees of Origin
UBA	German Federal Environmental Agency

References

- VdTÜV Code of Practice 1304 (10/2014)
- ISO/IEC 17065:2012 Conformity assessment – Requirements for bodies certifying products, processes and services.
- Annex 1 Average service life of facilities in hydraulic engineering, Guidelines on Dynamic Cost Comparison Calculations; 8 edition July 2012; ISBN 3-941897-55-7
- French Regulation of 14 March 2011 on the turnaround of hydropower stations (NOR: INDR1107585A)

¹ Energy Management Act



Foreword

Certification of the generation of electricity is used as a private-sector guarantee of origin in electricity trading or serves as a basis for the issue of national EU-conforming guarantees of origin. The certification of electricity generation always refers to specific sources of generation and serves as a guarantee to electricity purchasers that the electricity they buy is from renewable sources. Generally, the generated electricity is purchased by distributors or directly by large-scale consumers.

"Energy from renewable sources" or "renewables" as used in this standard refers to the definition used in the German legislation (Renewable Energy Sources Act, Biomass Ordinance). If the standard is applied outside Germany in a country with different definitions, the definition of the term "energy from renewable sources" or "renewables" that is stricter will be applied. If a source of energy which is accepted in Germany as renewable is not considered renewable in the country of electricity generation, it will not be recognised as renewable within the scope of TÜV SÜD certification. TÜV SÜD certification also accepts no sources of energy outside Germany which would not be recognised as renewable in Germany.

The "Generation EE" standard comprises "General requirements for certificate holders", "Requirements for accounting" and "Requirements for generation". It also includes recording of generation" and "Optional requirements". Optional requirements are defined for electrical work and power guarantees ("Generation EE+" module) and for furnishing proof of new plants ("Generation EEnew module") and carbon offsetting.

When this standard is applied, the requirements for certificate holders also include corporate strategy.

For certification to be successful, the organisation must have set itself the objective of increasing the share of renewable energy in its total energy mix.

Normally, certification of the "Generation EE+" module (work and power guarantees) can only be provided for a pool of plants. The certified pool of power plants enables the organisation to be certified to guarantee the power purchaser that the pool of plants can produce the requested load profile at any time. Compliance with the "Generation EE+" module is particularly suitable

for green electricity products certified in accordance with the "Product EE02" TÜV SÜD standard for electricity products (Certification of electricity products from renewable sources with simultaneous generation and consumption). A pool of power plants certified in accordance with "Generation EE+" can be compared to a virtual power station which produces power tailored to the load profile of the electricity customers.

The certification of the "Generation EEnew" module (requirement for new hydropower capacity) is possible if

- the power plant to be certified represents new developed capacity of energy from renewable sources (greenfield power plant), or
- the power plant to be certified has been subjected to comprehensive rehabilitation, or
- the power plant to be certified was largely replaced; or
- capacity has been increased and annual production raised.

Certification of a plant provides certificate holders with evidence that their plants, part of their plants or part of their generation is "new" as defined under this TÜV SÜD standard. The commissioning date is confirmed and accounting reviewed to prevent double marketing of the "new" quality.

Certification in accordance with the "Generation EEnew" module is particularly suitable for the delivery of green electricity products certified in accordance with the "Product EE01" TÜV SÜD standard for electricity products.

If the principle of simultaneity or the new plant quality of TÜV SÜD-certified electricity producers to green electricity suppliers is to be maintained for deliveries effected through brokers, these brokers must be included in the scope of certification or must be certified according to the TÜV SÜD standard "Trading EE" with the quality of simultaneity.

Certification of the optional carbon offsetting module is possible if the greenhouse-gas emissions caused by electricity generation are offset. Carbon offsetting takes into account the greenhouse gas emissions caused by power production including the upstream chains.

Compliance with these optional characteristics of the green electricity product is identified separately on the certificate.

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1. Scope and fundamentals

1.1 Scope

This standard defines the criteria governing the generation of electricity from renewable sources. The following companies can be certified according to this standard:

- Power station operators;
- Trading organisations, provided the power stations that supply them with electricity are included in the scope of the certification.

1.2 Sources and legal basis

- a. Directive 2009/28/EC of the European Parliament and the Council of 23 April 2009 on the promotion of the use of energy from renewable sources (Renewable Energy Directive);
- b. Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity (Internal Electricity Market (IEM) Directive)
- c. Act on the Revision of the Renewable Energy Sources Legislation in the Field of Electricity in the Federal Republic of Germany (EEG), as amended.
- d. German Law on Electricity and Gas Supply, Energy Industry Act (EnWG), as amended;

1.3 Coming into effect

This standard (*Version 07/2015*) will come into effect on 22 July 2015.

Following the introduction of a revised standard, certificate holders are granted a transition period of 12 months or up to the next re-certification audit (whichever is the longer), during which they can align their certified system to the requirements of the revised standard. The re-certification audit following the expiry of this period will then be based on the revised standard. Justified exceptions to this rule may be accepted by the Certification Body for "Climate and Energy" of TÜV SÜD.

1.4 Communication and use in advertising

Use of the certification in advertising statements must be in compliance with the Testing and Certification Regulations of the TÜV SÜD Group. Certification marks must only be used by the organisations included in the scope of certification. If certification is announced in public, all factual statements made must be covered by certification. Communication may not be misleading in any way.

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2. Requirements for certificate holders

2.1 Certification scope

Certificate holders must document the scope of certification in writing, append the scope to the application for certification and submit it to the certification body. To change the scope of certification, a new application must be submitted to the certification body. In this case, the application must include the following aspects:

- Energy carriers (e.g. hydropower, wind power, solar power, biomass)
- Technology (e.g. run-of-the-river, wood-chip-heating plant, biomethane co-generation unit)
- Number of plants
- Power station sites including total capacity and average annual output
- Optional modules. New plants or/and simultaneity.

In new applications, certificate holders can also name further organisations that they wish to include in the scope of the certification, such as:

- Electricity traders and suppliers, provided they market certified energy generation
- Power station companies in which the organisation holds shares or with which it has concluded long-term purchasing contracts
- Service providers that carry out certification-relevant functions

To be included in the scope of certification, these companies must maintain contractual relationships with certificate holders and comply with the relevant certification requirements.

2.2 Promotion of renewable energy

The electricity generator has set itself the objective of increasing the share of renewable energy in its generation electricity mix. The organisation has documented this objective either in its corporate policy or in a 3 to-5-year plan for increasing the share of renewable energy in its energy mix. Electricity generating organisations

that exclusively produce energy from renewable sources already fulfil this requirement.

2.3 Organisation

The certificate holder has appointed an Audit Representative. The Audit Representative submits all information needed for certification and is responsible for communicating the certification requirements within the organisation.

The organisation has established and documented the processes, roles and responsibilities for the delivery of certified energy.

2.4 Electricity declaration

The information concerning the ratio of energy carriers (fuel mix declaration) in the supplied electricity is provided in compliance with the legal regulations and/or in a manner that enables the organisations receiving the electricity to fulfil their duty of electricity disclosure in a timely and reliable manner.

3. Requirements for the accounting system

3.1 Accounting period

The accounting period must be defined in the run-up to certification. The permitted accounting period must not exceed 12 months. At the end of the selected period the energy account must not show a negative balance.

3.2 Ensuring a positive balance

The certificate holder maintains a reliable procedure for the ongoing monitoring and assurance of a positive balance of the quantities generated, purchased, stored and delivered. This procedure also considers possible deviations of the actual values from the forecasts and ensures that such deviations will not lead to a negative balance.

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3.3 Maintenance of qualities

The maintenance of the renewable quality complies with the legal requirements.

3.4 Accounting system

3.4.1 General

The quantities of energy generated and/or purchased and the quantity of energy delivered and/or consumed must be documented in an accounting system. Entries are based on either bills or meter readings.

3.4.2 Credit entries

Renewable energy credit entries in the accounting system are effected on receipt of the energy and/or the relevant documentation within the boundaries of the accounting system. If certification differentiates between various qualities of generation (e.g. generation EE_{new}), the renewable energy credit entry in the accounting system must also be differentiated according to these generation qualities. The quantities in the credit entry depend on the final bills and/or the metering values. One credit entry may summarise the energy quantities received in one month at maximum.

3.4.3 Debit entries

Debit entries from the accounting system are effected upon delivery of the electricity from renewable sources and/or submission of the guarantees of origin of energy from renewable sources and their entry in the energy accounting system. One debit entry may summarise the quantities sold or consumed during one month at maximum. Various generation qualities (e.g. EE_{new}) require quality-specific documentation of debit entries. The quantities of the debit entries depend on the final bills and/or the transferred load profiles or similar facts.

3.4.4 Use of forecast values

If no final billing data are available in the accounting period or if reading of electricity meters is only performed once a year, the above entries can also be effected on the basis of conservative forecasts.

3.4.5 Updating of forecast values

When entries are based on forecast values, the conservative nature of these forecast values

must be verified once the final data are available. If necessary, the calculation of the forecast values must be changed to ensure that differences between the forecast values and the actual values can be corrected in the next accounting period at the latest.

4 Requirements for the generation of renewable energy

4.1 Energy carrier and energy sources

All the electricity generated originates from renewable sources. Traceability to clearly described and identifiable sources is ensured. The certificate holders will disclose these sources to their clients.

4.2 Verification systems

If a national register of guarantees of origin as defined in Directive 2009/28/EC has been placed into service, proof that the generated and delivered electricity originates from renewable sources of energy must be provided through a guarantee of origin from the respective national register.

If there is no national register of guarantees of origin, the generation to be delivered and certified must be registered in the TÜV SÜD BlueRegistry (www.bluregistry.de) database.

4.3 Net energy principle

The subject of certification is the actually marketable amount of electricity based on a strict net energy principle. The marketable amount is calculated from the net electricity generation fed into the grid minus the externally purchased electricity used by the power station itself, the electricity used by the pump of pumped storage plants and all long-term delivery obligations explicitly referring to delivery from or to the certified power stations (e.g. substitution in kind / restitution / servitude and concession deliveries). For standardisation of the net-energy principle with the guarantees of origin systems, see Section 4.5.



4.4 Tolerances between generated guarantees of origin and verified amount of generation

Due to rounding errors when using load-profile data of meters or different times of meter reading, a deviation of up to 0.2 % in the generated amount of electricity governed by the GoO over or under the verified generation quantity is tolerated for the plants in the scope of certification.

A deviation of up to 0.5 % from the generated amount of electricity covered by the GoOs by the plants included in the scope of certification over or under the verified amount of generation based on meter readings is acceptable once within the 3-year certification cycle.

A deviation of more than 0.5 % of the generated amount of electricity covered by the GoOs for the plants included in the scope of certification over the verified generation amount based on meter readings must be compensated for or corrected retrospectively.

Systematic errors in the recording of the generated electricity must be corrected irrespective of the above tolerances.

4.5 Deductions

Deviations from the deductions mentioned in Section 4.3 are permissible for standardisation with national guarantee-of-origin systems if they are offset by the purchase, including the subsequent cancellation or sale of nationally recognised GoOs for the respective accounting period. If the GoOs required for offsetting originate from plants that have not been certified by TÜV SÜD, the amount must be increased by 2 % on the basis of the net energy principle.

For long-term delivery obligations, proof must be furnished that offsetting via the GoO accounts is easily traceable.

Under the above conditions, sufficient assurance of compliance with the net-energy principle is ensured in the overall accounting of all stakeholders.

4.6 Double counting

4.6.1 No double counting

The accounting system and the GoO system must be suitable for excluding double counting of renewable energy and qualities certified by TÜV SÜD as a general principle.

4.6.2 Double counting based on support schemes

Amounts of electricity subsidised to strengthen the expansion of energy from renewable sources cannot be certified. Given this, electricity for which feed-in remuneration is paid and/or its guarantee of origin cannot be accepted. Electricity derived from plants supported by investments and/or its guarantee of origin are accepted. Unsubsidised electricity which is sold directly from plants eligible for subsidies can be taken into account.

4.6.3 Double counting based on disclosure of the ratio of energy carriers

If the certified plants are located in a country where electricity disclosure is not mandatory and if the green quality is sold separately from the physical delivery, the necessary adjustment in the ratio of energy carriers must be checked. The producer's ratio of energy carriers and/or the electricity information must include feedback on the replaced electricity mix of the energy suppliers or final customers to whom the electricity is delivered.

5. Optional modules

The following modules are optional. Compliance with these modules is identified separately in the certificate.

5.1 "Generation EE+" module: simultaneity

To ensure compliance with the contractually agreed performances of the sources listed under Section 4.1 above (e.g. in the form of load profiles), the certificate holder maintains a reliable procedure which covers all steps throughout the process chain from generation in the power station to contract design and monitoring. Compliance with the guaranteed load profiles must be ensured throughout. In this context, the shortest time unit for load profiles used in the national energy industry must be selected. If no data is available for the shortest time unit, compliance with the load profiles must be ensured at a minimum of hourly intervals. By way of exception, the criterion is still considered fulfilled if the generated capacity falls below the contractually agreed total capacity in no more than three periods of a maximum total duration of 18 hours per year. Unforeseeable events which are out of the certificate holder's control (force majeure)², are excluded from the requirement to comply with the principle of simultaneity.

Possible replacement deliveries from power stations which are not included in the pool of certified plants must be generated by the same technology as the main delivery and must also be certified in accordance with TÜV SÜD's standard "Generation EE including the EE+ module" or a similar procedure. The share of external replacement deliveries may not exceed 5 % of the certified annual amount.

The guarantees of origin to be provided to the purchasers must correspond monthly to the agreed load profile.

5.2 "Generation EEnew" module: new plant

The EEnew module can be applied to verify whether a plant is an acceptable variant of a new plant. In addition, the year of commissioning is

shown on the certificate. The scope of this certification does not include verification of whether the year of commissioning is sufficient for product certification. This issue is exclusively part of product certification.

5.2.1 Accepted plants

As a matter of principle, all power stations irrespective of size are eligible for application of the new-plant criteria, including plants that can obtain feed-in remuneration (for example under the EEG, KEV). Feed-in remuneration also includes "production support" as defined by the EECS scheme and/or guarantee-of-origin system. However, the prohibition of double counting of the generated amounts of electricity as set forth in Section 4.6 applies without restrictions.

Plants can be deemed new plants if, in the first year of certification as a new plant, commissioning does not date back longer than shown in the table below:

Year of initial new-plant certification	Year of commissioning of the power plants
2015	2010
2016	2011
2017	2012
2018	2013
2019	2014
2020	2015

The certification of new power stations according to this standard can be maintained for a maximum period of 12 years following their commissioning.

5.2.2 Variants for complying with the "new plant" requirements

Certification in accordance with the "Generation EEnew" module (requirement for new power plants) is possible if

² E.g. Within this certification, rare flooding (HQ₁₀), is considered an unforeseeable event.



- the power plant to be certified represents newly developed capacity of energy from renewable sources (greenfield power plants); or
- the power plant to be certified was subjected to comprehensive rehabilitation and/or partly replaced; or
- the power plant to be certified was largely replaced; or
- capacity has been increased and annual production raised.

5.2.3 Newly developed energy capacity

New plants are plants that supply as yet unused energy capacity from renewable sources. The conditions included in the applicable permit in accordance with the relevant environmental law must be fully implemented.

5.2.4 Plant rehabilitation or replacement of parts of hydropower plants

A rehabilitated hydropower plant or a plant which has undergone comprehensive replacement of parts of the plant can be declared as a new plant if investments in the plant made over five consecutive years exceed a minimum of EUR 1,000 per kilowatt of bottleneck capacity existing before the rehabilitation or replacement.

The specific investments refer to the baseline year of 2008. To take inflation and price changes into account, the costs of modernisation must also be adjusted to 2008 by adding or deducting the relevant interest rate. For this purpose, an annual interest rate of 3 % is applied, unless evidence of a country-specific inflation rate is provided for the period in question.

Certification recognises investments in planning, ground work, infrastructure, work carried out on the main components, turbines and generators as well as the control system. For the total investment to be recognised, the parts of the plant and the building (e.g. generators, turbines, pipelines, water extraction, tunnels, channels, machine room) that were replaced must largely have reached their service life.

Costs for studies (feasibility etc.) for the preparation of the project file and the costs of preparing the approval documentation can be included even if they were incurred before the above 5-year period. For a detailed list of recognised investments, see the French

Regulation on the Rehabilitation of Hydropower Stations (NOR: INDR1107585A).

Downtimes of power stations for turnarounds of more than three months extend the maximum acceptable investment period by the downtime period. The investments must not include any write-offs or similar items from previous investment projects. Maintenance of the "Generation EEnew" certification further requires modernisation and replacement works to be fully implemented.

5.2.5 Comprehensive replacement of hydropower stations

If an existing plant is replaced by a new plant (e.g. based on re-licensing), the old plant is considered comprehensively replaced if

- the location of the power plant changes, or
- there is a change of more than 5 % in the supplied amount of usable energy, or
- water extraction from and supply to the power plant are completely replaced.

5.2.6 Capacity increase

A part of a power plant can be declared as new plant capacity if the modernisation of the plant or of parts of the plant actually increases the electricity capacity of the total hydraulic system by at least 4 %. In individual cases, even a minor increase in capacity may be recognised as a new plant capacity provided clear measurement records are submitted. In this case, classification as new will apply not to the entire plant but only to the additional capacity produced per year.

5.2.7 Accounting system

The requirements of Chapter 3 fully apply to the amounts of energy generated with the EEnew quality.

5.2.8 CO₂ offsetting module

If the certificate holder wishes to use climate neutrality or carbon neutrality in the advertising or marketing of the certified energy, 100 % of the greenhouse gas emissions caused by the generation of electricity from renewable sources must be offset by certificates of recognised climate-change projects. The greenhouse gas emissions caused must be calculated by recognised methods that also take into account upstream chains. The CERs needed to

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compensate for the emissions must be retired in the respective registry. This must be done within 3 months after the end of the accounting period at the latest. The retirement must be clearly referenced to the generation and the relevant accounting period. Climate-change projects are considered recognised if certified in the CDM, JI, Gold Standard or VCS systems. The purchase of the certificates of emission reduction (CERs) for CO₂ offsetting must be contractually assured in advance on the basis of plausible and conservative forecasts.

- a) Availability and quality of an internal quality management system
- b) Number, scope and complexity of the plants included in certification
- c) Number and characteristics of energy carriers
- d) Non-conformities identified in previous audits
- e) Number of companies included in the scope of certification

6 Requirements for the certification scheme

6.1 Certification process

The certification process comprises certification audits and surveillance audits. While the certification audit focuses on the assessment of systems, processes, tools etc., the surveillance audit verifies compliance with the requirements of the standard in the past accounting period and reviews possible changes in the system compared to the certification audit. The certification cycle comprises a certification audit, a first surveillance audit (depending on the risk involved, at least one audit within 12 months of the certification audit) and a second surveillance audit (depending on the risk involved, at least once within 12 months of the first surveillance audit). The second surveillance audit will be followed by either a re-certification process that is analogous to the certification process or a closure audit (depending on the risk, within 12 months of the 2nd surveillance audit at the latest).

6.2 Risk assessment

The Climate and Energy certification body of TÜV SÜD Industrie Service GmbH maintains a risk management system for auditing, assessment and decision-making. The risk management system must analyse the risk of the certificate holder's non-conformity with the requirements of this standard. Risk assessment must take into account the following indicators as a minimum requirement:

The quantity and the level of thoroughness of the audit is defined based on the results obtained in risk assessment. This concerns, as minimum requirements,

- a) Audit type
- b) Review of the measured data and original documentation
- c) Review of business transactions (purchase / sale)

In addition, it must be established whether additional checks during the year require an increase in review frequency.

6.3 Materiality

The materiality of data is defined as follows: information is significant if the omission or incorrect statement or reporting of said information could lead to a different result of the evaluation. In light of the above, this standard defines the materiality level at 5% of the quantity of energy sold or purchased.

6.4 Confidence level

Certification is based on a decision made with reasonable assurance in accordance with ISEA 3000. Certifications that are based on a decision with limited assurance are not accepted within the scope of this standard.