



Conversion instructions

Version history

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1.0	2 March 2022	First version

Instructions on how to cancel a guarantee of origin in conversions between forms of energy

When energy is converted from one form to another, the resulting energy carrier may be granted a guarantee of origin (GO), if the origin of the energy used in its production has been verified by cancelling GOs or the origin can be reliably verified by other means. The GO system calls this process *energy carrier conversion*. In the conversion, the *input energy carrier* that is entitled to a renewable energy GO is converted to an *output energy carrier*, that is likewise entitled to a renewable energy GO. In Finland's national GO origin system, the potential energy carriers in the conversion are renewable electricity, renewable gas, renewable hydrogen, and renewable heat or cooling.

To prevent double accounting, the amount of input energy carrier GOs that are cancelled in the conversion process must equal the amount of input energy carrier consumed in the conversion. This is a precondition to granting GOs to the output energy carrier.

In order to apply for GOs for energy produced in an energy production plant based on conversion, the operator of the plant might have to belong to several national GO registers or appoint a representative to the registers. In Finland, the electricity GO register is maintained by Finextra Oy, the gas and hydrogen GO register by Gasgrid Finland Oy, and the heat and cooling GO register by the Energy Authority.

1. Using GOs to demonstrate the origin of the input energy carrier

The following instructions apply to an operator that intends to demonstrate the origin of the input energy carrier consumed in a conversion process by cancelling a corresponding amount of input energy carrier GOs:

1.1 Registering an energy production plant

The energy production plant in which the conversion takes place is registered in the GO register of the output energy carrier. If the plant produces more than one output energy carrier, for example both renewable heat and electricity, the plant must be registered in the GO register of both electricity and heat and cooling. During registration, the input energy carrier is categorised as “unspecified renewable energy” and “unspecified fossil energy”, in accordance with the instructions of the maintainer of the register. The first label is used for the proportion of the input energy carrier with a guaranteed origin, and the latter label is used for the proportion whose origin is not guaranteed. In addition, any other energy sources the plant might use must also be reported. The verifying party verifies the energy sources when it issues the verification certificate. The verification certificate must include a description of how the amount of input energy carrier was determined.

1.2. Cancelling the GOs of the input energy carrier

The cancellation of the input energy carrier GOs is done in the *GO register of the input energy carrier*. GOs cannot be cancelled before the energy production plant in which the conversion takes place has been registered in the GO register of the output energy carrier. GOs can be cancelled in the following ways in the registers:

1. Cancellation of the end use of the energy (sales or marketing)
2. Cancellation of the energy carrier conversion

When the operator cancels the GOs of the energy carrier conversion, the operator provides information on the target of the conversion cancellation, meaning the energy production plant in which the conversion takes place. The plant is identified by its GSRN. The register maintainers publish on their public website the conversion energy production plants in their register, including the GSRN numbers of the plants. Therefore, the operator can visit the website of the GO register for the output energy carrier to obtain the information needed for conversion cancellation.

The cancellation certificate made for the conversion must contain the following information:

- Method of cancellation: Cancellation of the energy carrier conversion
- Target of cancellation: The GSRN of the energy production plant registered in the GO register of the output energy carrier
- Target of cancellation: Name of the energy production plant
- The country of consumption of the cancellation, which is always Finland in the case of a conversion
- The year of consumption, meaning the year in which the conversion corresponding to that cancellation takes place

If the conversion outputs two energy carriers that belong to different GO registers, such as electricity and heat, and the operator wants to apply GOs for both of them, the operator must follow the procedure in example 1.5.

If the operator wishes to use foreign GOs for the conversion, the foreign GOs must be transferred to the Finnish GO register for the energy carrier and then cancelled for conversion in the Finnish register.

The cancellation must be made before GOs based on conversion can be granted. GOs that are cancelled for conversion must be valid *at the time of conversion*, which in practice means the entire calendar month in which the conversion takes place. The applicant for the conversion-based GO shall ensure that the cancellation for the conversion has been made in good time and that the period of validity of the GOs is sufficient.

1.3. Granting GOs for the output energy carrier

GOs are granted in the register of the output energy carrier. When applying for conversion GOs, the operator submits the GO cancellation certificates of the input energy carrier to the maintainer of the output energy carrier register, as instructed by the maintainer of the register. Before issuing new GOs, the registry maintainer verifies that the cancellations were made properly.

The GO application must state the energy sources used for the production of the output energy carrier. This also applies to conversions. In conversions, the source of energy can be reported as “unspecified renewable energy” without further classification, regardless of the source of renewable energy stated in the GOs cancelled for the conversion. As a result, the GOs granted will state “unspecified renewable energy” as the energy source.

GOs granted on the basis of a conversion are valid for 12 months from the end of the month in which the conversion took place. The conversion applicant shall ensure that the application for conversion GOs is submitted in good time to the maintainer of the corresponding energy form registry, as instructed by the maintainer of the registry.

1.4 Example of using GO cancellations in order to obtain a GO for a conversion

An electric boiler produces heat from electricity. If the origin of the electricity is proven to be renewable, this process is considered a conversion from renewable electricity to renewable heat. The operator registers the electric boiler as an energy production plant in the heat and cooling register. In addition, the operator makes an agreement with the account holder in the electricity GO register on the cancellation of the GOs of the renewable electricity consumed in conversion at the plant. Alternatively, the operator registers as an account holder in the electricity GO register in order to make the cancellations themselves.

In April, the electric boiler generates 90 MWh of heat and consumes 100 MWh of electricity. The account holder cancels an equal amount, 100 MWh, of renewable electricity GOs in the electricity GO register. The cancellation method is “conversion” and the target of cancellation is the electric boiler, which is identified by its GSRN ID in the heat and cooling register. The account holder ensures that the period of validity of the GOs to be cancelled extends to at least the end of the production period of conversion, which is the end of April.

The operator submits to the heat and cooling register a GO application for 90 MWh of renewable heat for production by the electric boiler for April. The GO application states that the input energy source

is 100 MWh of unspecified renewable energy source. The GO application is submitted with attached certificates on the cancellation of the GO for electricity. The maintainer of the register performs a sanity check on the produced heat and cancellations, and grants a GO for renewable heat. The granted GO for renewable is valid for 12 months from the end of the month of production, that is, from the end of April.

1.5 An example on the cancellation of GOs in an energy production plant that produces more than one output energy carrier

When registering in a GO register an energy production plant that performs conversion and outputs two energy carriers that belong to different GO registers, the register maintainers must be informed that the plant also belongs to or will also belong to another GO register. During registration, both registers will assign the plant a unique GSRN ID. However, the name of the plant must be the same in both registers.

When the GOs of the input energy carriers of the conversion are about to be cancelled, as specified in Chapter 1.2, the GSRN ID of the plant in either register can be reported as the target of the cancellation. When submitting a GO application to the registers of output energy carriers, the input energy sources can be reported similarly in both registers with the same cancellation certificates attached.

An example of this is a CHP plant that burns biogas and produces both heat and electricity. In other words, the plant converts renewable gas into renewable heat and electricity. An operator who wishes to register the plant in both GO registers (electricity, and heat and cooling) must report to the maintainers of the registers that the plant will belong to both registers. In addition, the operator makes an agreement with the account holder in the gas and hydrogen GO register on the cancellation of the GOs of the renewable gas consumed in conversion at the plant, or registers as an account holder in the gas GO register in order to make the cancellations themselves. When cancelling the GOs of the renewable gas consumed in the conversion, the cancellation is targeted at the plant registered in either the electricity GO register or the heat GO register by using the GSRN of the plant in that register. When applying for GOs for the heat and electricity produced, the same amount of biogas is reported as input energy carrier in both the electricity GO register and the heat GO register. The application is submitted with an attached cancellation certificate of an equal amount of GOs of renewable gas. The maintainers of the register know that the plant also belongs to another GO register, which means that the same cancellation certificate can be approved in both registers.

1.6. Cancellation for heat or cooling produced by a heat pump that uses an external energy source

A converting energy production plant can also use other energy sources than input energy carriers. For example, a heat-producing seawater heat pump uses seawater heat as its energy source in addition to converting electricity into heat. In this case, the energy sources of the plant are reported as described in Chapter 1.1 as "undefined renewable energy", "undefined fossil energy", and "hydrothermal heat", which represents seawater heat. The heat pump's electricity consumption must be determinable primarily by metering. On the other hand, the amount of heat recovered from seawater cannot be measured directly.

The proportion of the electricity consumed whose origin is demonstrated as renewable is reported as renewable energy. The GO cancellation certificates must be submitted as attachments. The remaining proportion of the electricity is reported as fossil energy. The amount of heat extracted from seawater is obtained by subtracting the amount of electricity consumed from the amount of heat produced. This amount is also stated in the GO application as a proportion of the quantities of energy sources used. The amount of GOs granted for renewable heat corresponds to the quantities of electricity and hydrothermal energy whose origin was certified as renewable.

2. Using the data in the verification certificate to demonstrate the origin of energy consumed in the conversion process

If the origin of the energy carrier used is not demonstrated by GOs, the origin of the energy must be reliably verified by other means. In this case, the use of renewable energy in the conversion must be stated in the verification certificate of the energy production plant. For example, if electricity produced by renewable energy sources comes from the same plant area and could be demonstrated as such in the plant verification certificate, the operator would not have to separately apply for and cancel GOs for the conversion. Similarly, when producing electricity or heat by renewable gas, the origin of the gas can be considered reliably verified if the gas is delivered for consumption in a pipeline that is not a part of the natural gas network referred to in the Natural Gas Market Act. In such a case, no application may be made for GOs for the input energy carrier.

When a plant is recorded in a register that corresponds to the output energy carrier generated in the conversion process, the register maintainer examines the verification certificate submitted along with the registration application and thus becomes informed that the conversion and the input energy carrier are reliably verified. In such a case, the operator of the energy production plant is responsible for ensuring that the GOs applied for the input energy carrier do not breach the GO procedure or that the plant's policies are not changed in ways that would conflict with the verification application. To prevent double accounting, the maintainer of the register that records the plant reports the procedure to the maintainer of the register of the input energy carrier. For example, if the conversion uses electricity generated by wind turbines located in the same power plant area, the maintainer of the electricity GO register will be informed that no GOs can be granted for this electricity. Conversion plants are monitored by the Energy Authority.

2.1 An example of granting GOs for renewable hydrogen by another reliable procedure

Hydrogen is produced in a power plant area from electricity generated solely by a wind turbine located in the same power plant area. The wind turbine supplies electricity solely to the hydrogen production plant. The operator makes an agreement with an assessment body on the granting of a verification certificate. The metering scheme diagram attached to the verification certificate also describes the role of the wind turbine in the operation of the hydrogen plant. The operator registers the hydrogen-producing plant as a conversion-based energy production plant in the register for gas and hydrogen. Before adding the plant to the register, the register maintainer checks the verification certificate and the procedure described in it. To prevent double accounting, the maintainer of the gas and hydrogen register contacts the maintainer of the electricity register and informs them of the role of the wind turbine in the conversion-based production of hydrogen.

The operator applies for GOs for renewable hydrogen from the gas and hydrogen register per production period. When the register grants a GO, it does not submit any cancellation certificates for the electricity generated by the wind turbine. The operator ensures that no applications for GOs for renewable electricity are made to the electricity register for the electricity generated by the wind turbine and consumed in the conversion process. This can be achieved, for example, by an agreement with the electricity supplier. This is checked regularly during the verifications.

If a plant area contains both a hydrogen production plant and a wind turbine, and the hydrogen plant uses electricity solely from the wind turbine, but the wind turbine produces electricity for both the hydrogen plant and the electric grid, the electricity produced by the wind turbine must be metered

separately for the portion that goes to the hydrogen plant and the portion that goes to the grid. Otherwise, applications for GOs would first have to be made for the electricity generated and then cancelled, in an amount corresponding to the electricity supplied to the hydrogen plant.

2.2 An example of using a productised energy carrier in a conversion process

The operator of an electric boiler purchases only renewable electricity from the grid for the boiler. In this case, the supplier of renewable electricity has as an obligation to demonstrate that the electricity they supply is renewable. The operator makes an agreement with an assessment body on the granting of a verification certificate. The information in the verification certificate shows the plant only uses electricity that is purchased as renewable. The operator registers the plant as a conversion-based energy production plant in the register for heat and cooling. Before adding the plant to the register, the register maintainer checks the verification certificate and the procedure described in it.

The operator applies for GOs for renewable heat from the heat and cooling register per production period. When the register grants a GO, it does not submit cancellation certificates for the electricity consumed. The operator cannot switch to using electricity whose origin is non-productised, meaning it is not verified as renewable, without reporting this to the maintainer of the register and changing their procedures.

The supplier of renewable electricity cancels an amount of renewable energy GOs that corresponds to the amount of energy they have supplied. This happens as described in Chapter 1.2, and the cancellation method is "Cancellation of the end use of the energy (sales or marketing)".

3. Cooperation between register maintainers

Register maintainers meet regularly, at least once every three months. The meetings also discuss the registrations of energy production plants that utilise conversion and the cancellations associated with conversions. Each register maintainer ensures that their registers can output reports on cancellations associated with conversions, including the targets of those cancellations. This is to enable other registers to grant GOs and the Energy Authority to monitor the activity. The reporting methods and schedule shall be agreed between the register maintainers. Reports must be ready for delivery or viewing in the register on the 5th business day of the month following the month to be reviewed.

Register administrators shall also follow the development of the CEN EN-16325 standard. The standard will include instructions on how to grant and cancel GOs for conversions. The Energy Authority will update the conversion instructions when the standard enters into force and is applicable.