

Amendment C10/11 – text proposition – 06/2025

Allow the use of P1 port as alternative to an EnFluRi sensor

Proposal for public consultation (24/06/2025 to 24/07/2025 at 5pm)

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1 CONTEXT OF THIS AMENDMENT

The current prescription C10/11 requires a **power control system** based on a measurement via an **EnFluRi sensor** for small power generating installations containing battery storage. This is a German principle that requires, among other things, a specific speed of data exchange, a speed that the current smart meters do not yet have. For larger installations, the choice of the power management system is more flexible, as the distribution system operator has more insight and influence for that segment of installations via the network study, and if necessary, a homologated power limiting relay (list C10/25) can also be requested.

The current basic rule for battery storage:

- The injection of the battery is adjusted to the AC power of solar production (or other "green" generation).
- If there is no solar production, in principle no injection is allowed unless following a grid study by the distribution system operator.

The reasons for this current rule:

- A battery does not necessarily contain "green" energy, it can store any type of grey energy.
- The relaxation for batteries was introduced, among other things, for customers with a single-phase grid connection who already had 5kVA solar panels and therefore could not install batteries. The additional battery was authorized on the condition that it was not able to inject on top of the PV.

Since the publication of the C10/11 edition of 2019, there has occasionally been a demand for the use of the (slower) P1 port the distribution system operator's smart meter, for the power control system. Until now, this has not been authorized for the following reasons:

- *The P1 port cannot be used as part of a 'security system', as it must be a complete power control system under the control and responsibility of the grid user. This is not the case if the P1 port of the smart meter is used, as the smart meter is owned by the distribution system operator.*

- *In addition, the speed, resolution and type of information from the P1 port are not suitable for this application and do not comply with the current requirements of C10/11 for the mandatory power control system.*
- *The P1 port of the smart meter may be used by the grid user as input for an energy management system in the home.*

Since the approval of plug & play systems on 17/04/2025, this question has been coming back frequently. For plug & play batteries, a “dongle” for the P1 port is often available for communication with the battery. A separate, albeit simple EnFluRi sensor at the distribution board requires an additional action that is often too technical for the average user, which in some cases means that an installer will still be needed, so that the simple plug & play principle is somewhat undermined.

This revision is limited exclusively to the aspects related to the power control system for batteries in small power generating installations.

A comprehensive revision of C10/11 is scheduled in the context of the publication of the NC RfG 2.0.

2 CURRENT TEXT C10/11

2.1 [C10/11, §4 Definitions and acronyms, §4.1.6 Power-generating unit](#)

Indivisible set of equipment that can generate electric energy independently and which can feed this energy into a distribution network

Note 1: For example, a combined cycle gas turbine (CCGT) consisting of a gas tur-bine and a steam turbine, or an installation consisting of an internal combustion en-gine (ICE) followed by an organic Rankine Cycle (ORC) machine are each considered to be a simple power-generating unit.

Note 2: When a production unit is a combination of technologies leading to different requirements, this must be settled on a case-by-case basis.

Note 3: A power storage system operating in power-generating mode and connected on its AC side to a distribution network is considered to be a production unit.

Note 4: A distinction is made between non-synchronous power-generating units (i.e. that are connected in a non-synchronous way to the distribution network) and syn-chronous power-generating units (i.e. that are connected in a synchronous way to the distribution network).

2.2 [C10/11, §4 Definitions and acronyms, §4.1.7 Small power-generating plant](#)

A power-generating plant that meets all of the following conditions.

1. Power limit of power-generating units
The sum of the maximum power of all the power-generating units cannot exceed the limits as indicated in the Table 2 hereunder. (...)
2. Automatic separation system (...)
3. If presence of an energy storage system: use of an EnFluRi sensor
If the power-generating plant includes an energy storage system, an EnFluRi sensor must be provided to control the power injected on the distribution network. The EnFluRi sensor is a di-rectional power sensor having a communication link with the energy storage system. The sensor and its control system have to be certified for their compliance with the relevant re-quirements in the FNN Hinweis ‘Anschluss und betrieb von Speichern am Niederspan-ningsnetz¹¹’.
Note: As long as conformity assessment by a certified body is not available on the market, an assessment based on a manufacturer’s declaration of compliance can be used.
4. No particular case
(...)

¹¹ This document can be downloaded on the website of VDE FNN (<https://www.vde.com/de/fnn>)

2.3 [C10/11, §4 Definitions and acronyms, §4.1.10 Energy storage systems](#)

A unit capable of extracting electrical energy from a network of an DSU or a distribution net-work, storing it and rendering it independently the nature of the technical implementation of that unit.

Note:

- An energy storage system that have the possibility to inhibit power injection into distribution network by software (with the exception of a non-parametric firmware out of the factory out of the factory) is considered being technically able to supply energy to the distribution network and therefore covered by this definition.
- A direct current connected energy storage system with another means of power-generation is considered a non-synchronous power-generating unit.

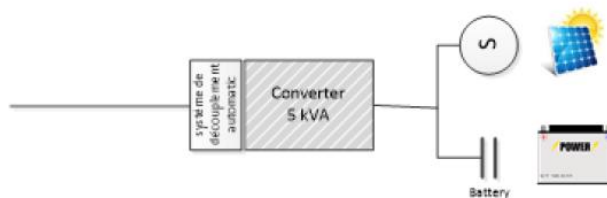


Figure 2 – Example of a DC-connected energy storage system

2.4 [C10/11, §5 Procedure for commissioning and decommissioning, §5.3 Simplified process for a small power-generating plant, STEP 3: Execution](#)

The DSU can take the necessary actions to install the power-generating unit (or delegate this task) in accordance with these technical prescriptions C10/11. Particular attention should be paid to the following points.

Settings

During this step the following specific settings must be realized:

- The automatic separation system must be set in accordance with the requirements of these technical prescriptions (see ANNEXE C, § C.1). The installer must provide a declaration of honour confirming that the parameter setting of the automatic separation system is in accordance with the requirements of these technical prescriptions. This declaration must be added to the technical dossier that will be submitted to the DSO upon notification (see below)
- Within the required capabilities regarding reactive power exchange, the installer must set the control mode for reactive power in accordance with the guidelines the DSO publishes in its website. If the DSO does not publish a control mode, the power-generating unit must be set in accordance with § D.7.1.
- In the case of the presence of an energy storage system, the EnFluRi sensor must be set in accordance with § 7.11.2.1.

Phase imbalance (in the case of a 3-phase connection to the distribution network)

The power-generating plant must be designed in such manner that the imbalance occurring between the power generated on different phases never exceeds the limit of 5 kVA.

A multi-phased connection is mandatory for small power-generating plants with a maximum power exceeding 5 kVA^{14,15}, and highly recommended for power-generating plants with a maximum AC power exceeding 3,6 kVA.

The prescriptions for phase imbalance are specified in § 8.2.5.

In case of the presence of an energy storage system, refer to § 7.11.1

14 The energy storage systems are not included in this calculation if their cumulated power $\leq$ the total power of the other power-generating units. Otherwise, it is the sum of the maximum powers of these energy storage systems that is decisive in this calculation.

15 Some DSOs allow higher power, the applicable limit being mentioned on the website of the DSO concerned

2.5 [C10/11, §5 Procedure for commissioning and decommissioning, §5.3 Simplified process for a small power-generating plant, STEP 5: Notification](#)

Based on a technical dossier the DSU must report the impending commissioning of a power-generating unit. The technical dossier must be submitted to the DSO.

The technical dossier consists on the one hand, of the (digital) notification form for a small power-generating plant that is available from the DSO's website, and on the other hand, of additional information. The latter will include at minimum:

- A single wire diagram indicating the power-generating unit's connection at the power-generating plant;
- The installer's declaration of honour confirming that the parameter setting of the automatic separation system is in accordance with the requirements of these technical prescriptions (see step 3);
- If the power-generating plant consists of a combination of an energy storage system, the installer's declaration of honour confirming that the EnFluRi sensor has been installed in line with the prescriptions of this document (see step 3) mentioning the set limit for the power injected in the distribution system.
- The inspection report of the authorized body mentioned in step 4 that, in addition to the proof of conformity of the plant to GRIE, contains the following information :

- If an external automatic separation system is used (instead of a more common internal one), the type of the used automatic separation system is included in the C10/21 list. This list can be consulted on the Synergrid website (www.synergrid.be) under the heading «Gehomologeerde materialen » (Dutch) or « Matériels homologués » (French) [Homologated materials]. Only types homologated by Synergrid included in the C10/21 list are allowed.
- The result of the shutdown test that must confirm the establishment of a galvanic separation after maximum 5 seconds.
- The reference of the homologation of the type corresponding to the relevant power-generating unit. This reference is specified in the C10/26 list of Synergrid. This list can be consulted on the Synergrid website (www.synergrid.be) , in the Homologated materials – Electricity – Other section.

STEP 6 may only be executed when a complete technical dossier has been submitted.

Note: A notification may give rise to other actions that fall outside the scope of these C10/11 prescriptions (for example with regard to the energy measurement).

The DSO can review the technical dossier (STEP 5b). If the DSO ascertains infringements of the C10/11 prescriptions, the DSO will notify the DSU in writing that the power-generating unit may not be connected to the distribution network (any longer). The DSU will take appropriate action(s) determined by the nature of the infringements, for example adapting the power-generating plant to comply with C10/11.

2.6 [C10/11, § 7 Additional plant requirements, § 7.11 Energy storage systems, §7.11.2 Power control system](#)

7.11.2 Power control system

7.11.2.1 Requirements for a small power-generating plant

An EnFluRi sensor has to be installed in such a way that at any time the power injected into the distribution network is limited to the maximum power of the other means of power-generation. In case of absence of other means of power-generation in the power-generating plant, this maximum power is equal to zero.

Remark : If, however, the URD wants to be able to inject into the network a power higher than the sum of the maximum powers of the other means of power-generation, the standard procedure for commissioning the installation, described in §5.2., should be applied

Failure of the EnFluRi sensor should result in system behavior preventing the injection limit being exceeded (if necessary, the injection will be stopped). The energy storage system can remain active to prevent possible damage to the system, for example due to a deep discharge.

7.11.2.2 Requirements for another (≠ small) power-generating plant

For situations where injection into the distribution network is limited, a power control system is required.

In order to optimize the power exchange with the distribution network, the energy storage system must have a power management system associated with a directional sensor that communicates with the energy storage system. The power management system and the sensor must prevent the power injected into the distribution network to exceed a specified limit. The following basic rules apply:

- The communication module for the sensor can be integrated in a central control unit,, provided that a clear assignment of the sensor to the energy storage system is guaranteed.
- Malfunction of the measuring system or the sensor must result in system behavior preventing the injection limit being exceeded (if necessary, the injection will be stopped). The energy storage system can remain active in order to prevent possible damages to the system, for example as a result of a total discharge.
- The technical characteristics of the power control system (settings, response time) must be minimum compatible with the settings and times of the export limitation relay (see §7.6.4).
- A type test is performed and a type report is drafted.

For this purpose, it is authorized to use an Enfluri type system, as described in the FNN standard Hinweis - Anschluss und Betrieb von Speichern am Niederspannungsnetz.

A manufacturer's declaration of conformity is sufficient as long as no conformity assessment procedure by a certified body is available.

In addition, during the study phase, the GRD may impose the placement of an export limitation relay (see §7.6.4) to avoid the risk of voltage or current congestion.

3 AMENDMENT – ADAPTED C10/11 TEXT PROPOSITION

3.1 C10/11, §4 Definitions and acronyms, §4.1.6 Power-generating unit

Indivisible set of equipment that can generate or reinject electric energy independently and which can feed this energy into a distribution network.

Note 1: For example, a combined cycle gas turbine (CCGT) consisting of a gas turbine and a steam turbine, or an installation consisting of an internal combustion engine (ICE) followed by an organic Rankine Cycle (ORC) machine are each considered to be a simple power-generating unit.

Note 2: When a production unit is a combination of technologies leading to different requirements, this must be settled on a case-by-case basis.

Note 3: A power storage system operating in power-generating mode and connected on its AC side to a distribution network is considered to be a production unit.

Note 4: A distinction is made between non-synchronous power-generating units (i.e. that are connected in a non-synchronous way to the distribution network) and synchronous power-generating units (i.e. that are connected in a synchronous way to the distribution network).

3.2 C10/11, §4 Definitions and acronyms, §4.1.7 Small power-generating plant

A power-generating plant that meets all of the following conditions.

1. Power limit of power-generating units

The sum of the maximum power of all the power-generating units cannot exceed the limits as indicated in the Table 2 hereunder. (...)

2. Automatic separation system (...)

3. If presence of an energy storage system: use of a power control system compliant with the requirements in §7.11.2, to control the power injected on the distribution network.

4. No particular case (...)

3.3 C10/11, §4 Definitions and acronyms, §4.1.10 Energy storage systems

A unit capable of extracting electrical energy from a network of an DSU or a distribution network, storing it and rendering it independently the nature of the technical implementation of that unit.

Note:

- An energy storage system that have the possibility to inhibit power injection into distribution network by software (with the exception of a non-parametric firmware out of the factory out of the factory) is considered being technically able to supply energy to the distribution network and therefore covered by this definition.
- A direct current connected energy storage system with another means of power-generation is considered a non-synchronous power-generating unit, and is also called a hybrid system.

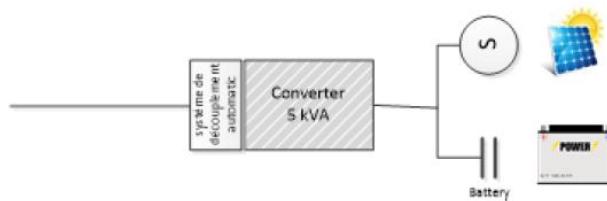


Figure 2 – Example of a DC-connected energy storage system (hybrid system)

3.4 C10/11, §5 Procedure for commissioning and decommissioning, §5.3 Simplified process for a small power-generating plant, STEP 3: Execution

The DSU can take the necessary actions to install the power-generating unit (or delegate this task) in accordance with these technical prescriptions C10/11. Particular attention should be paid to the following points.

Settings

During this step the following specific settings must be realized:

- The automatic separation system must be set in accordance with the requirements of these technical prescriptions (see ANNEXE C, § C.1). The installer must provide a declaration of honour confirming that the parameter setting of the automatic separation system is in accordance with the requirements of these

technical prescriptions. This declaration must be added to the technical dossier that will be submitted to the DSO upon notification (see below)

- Within the required capabilities regarding reactive power exchange, the installer must set the control mode for reactive power in accordance with the guidelines the DSO publishes in its website. If the DSO does not publish a control mode, the power-generating unit must be set in accordance with § D.7.1.
- In the case of the presence of an energy storage system, [the power control system](#) must be set in accordance with § 7.11.2.1.

Phase imbalance (in the case of a 3-phase connection to the distribution network)

The power-generating plant must be designed in such manner that the imbalance occurring between the power generated on different phases never exceeds the limit of 5 kVA.

A multi-phased connection is mandatory for small power-generating plants with a maximum power exceeding 5 kVA^{14,15}, and highly recommended for power-generating plants with a maximum AC power exceeding 3,6 kVA.

The prescriptions for phase imbalance are specified in § 8.2.5.

In case of the presence of an energy storage system, refer to § 7.11.1

14 The energy storage systems are not included in this calculation if their cumulated power $\leq$ the total power of the other power-generating units. Otherwise, it is the sum of the maximum powers of these energy storage systems that is decisive in this calculation.

15 Some DSOs allow higher power, the applicable limit being mentioned on the website of the DSO concerned

3.5 C10/11, §5 Procedure for commissioning and decommissioning, §5.3 Simplified process for a small power-generating plant, STEP 5: Notification

Based on a technical dossier the DSU must report the impending commissioning of a power-generating unit. The technical dossier must be submitted to the DSO.

The technical dossier consists on the one hand, of the (digital) notification form for a small power-generating plant that is available from the DSO's website, and on the other hand, of additional information. The latter will include at minimum:

- A single wire diagram indicating the power-generating unit's connection at the power-generating plant;
- The installer's declaration of honour confirming that the parameter setting of the automatic separation system is in accordance with the requirements of these technical prescriptions (see step 3);
- If the power-generating plant consists of a combination of an energy storage system, the installer's declaration of honour confirming that [the power control system](#) has been [set up](#) in line with the prescriptions of this document (see step 3) mentioning the set limit for the power injected in the distribution system.
- [If applicable, the](#) inspection report of the authorized body mentioned in step 4 that, in addition to the proof of conformity of the plant to GRIE, contains the following information :
 - If an external automatic separation system is used (instead of a more common internal one), the type of the used automatic separation system is included in the C10/21 list. This list can be consulted on the Synergrid website (www.synergrid.be) under the heading «Gehomologeerde materialen » (Dutch) or « Matériels homologués » (French) [Homologated materials]. Only types homologated by Synergrid included in the C10/21 list are allowed.
 - The result of the shutdown test that must confirm the establishment of a galvanic separation after maximum 5 seconds.
- The reference of the homologation of the type corresponding to the relevant power-generating unit. This reference is specified in the C10/26 list of Synergrid. This list can be consulted on the Synergrid website (www.synergrid.be) , in the Homologated materials – Electricity – Other section.

STEP 6 may only be executed when a complete technical dossier has been submitted.

Note: A notification may give rise to other actions that fall outside the [scope of](#) these C10/11 prescriptions (for example with regard to the energy measurement).

The DSO can review the technical dossier (STEP 5b). If the DSO ascertains infringements of the C10/11 prescriptions, the DSO will notify the DSU in writing that the power-generating unit may not be connected to the distribution network (any longer). The DSU will take appropriate action(s) determined by the nature of the infringements, for example adapting the power-generating plant to comply with C10/11.

3.6 C10/11, § 7 Additional plant requirements, § 7.11 Energy storage systems, §7.11.2 Power control system

7.11.2 Power control system

101 If an energy storage system is present in the power generating installation, a power control system must be provided
102 to control the power injected on the distribution network.

103 The power control system has a communication link with the energy storage system, and can receive its information
104 in various ways:

- 105 1. Either from an EnFluRi sensor, in accordance with the VDE FNN Hinweis „Anschluss und Betrieb von
106 Speichern am Niederspannungsnetz“, which can be downloaded from the VDE website (www.vde.com)
- 107 2. Or via the data provided via the P1 port of the distribution system operator's smart meter.
- 108 3. Or via another directional sensor or meter

109 The power control system must operate in such a way that the power injected into the distribution network never
110 exceeds a specified limit.

111 An EnFluRi sensor is a directional power sensor with a communication connection to the energy storage system,
112 according to the requirements of the VDE FNN Hinweis "Anschluss und Betrieb von Speichern am
113 Niederspannungsnetz".

- 114 • The EnFluRi sensor is provided in the distribution board or at another measuring point where the combined
115 injected power of all power generating units present can be measured.
- 116 • The EnFluRi sensor may be combined with other functions in the same equipment (imbalance, separation
117 system, power management, etc.)
- 118 • The communication module for the sensor can be integrated in a central control unit, provided that a clear
119 assignment of the sensor to the energy storage system is guaranteed.
- 120 • The measured values must be measured and transmitted at least once every 500 milliseconds.
- 121 • Malfunction of the sensor must result within one minute in system behaviour preventing the injection limit
122 being exceeded (if necessary, the injection will be stopped). The energy storage system can remain active in
123 order to prevent possible damages to the system, , for example due to a deep discharge.
- 124 • In the event of a deviation caused by a step response, the system must react so quickly that within 3 seconds
125 the error is reduced to less than 10% of the initial value.
- 126 • The protection functions required in this specification must not be affected by the functional chain consisting
127 of the EnFluRi sensor and the energy storage system.

128 The correct functioning of an EnFluRi sensor according to the FNN Hinweis is demonstrated by a declaration of
129 conformity from the manufacturer, as long as conformity assessment by a certified body is not available on the
130 market.

131 **7.11.2.1 Requirements for a small power-generating plant**

132 The power control system receives its information via an EnFluRi sensor or via the P1 port of the smart meter of the
133 distribution system operator. Use of another directional sensor or meter is not allowed.

134 The power control system has to be installed in such a way that at any time the power injected into the distribution
135 network is limited to the maximum power of the other power-generation units. In case of absence of other means of
136 power-generation in the power-generating plant, this maximum power is equal to zero.

137 Remark : If, however, the URD wants to be able to inject into the network a power higher than the sum of the
138 maximum powers of the other means of power-generation, the standard procedure for commissioning the
139 installation, described in §5.2., should be applied

140 **7.11.2.2 Requirements for another (≠ small) power-generating plant**

141 For installations where injection into the distribution network is limited, a power control system is required. In
142 addition, during the study phase, the distribution system operator may impose the placement of an export limitation
143 relay (see §7.6.4) to avoid the risk of voltage or current congestion.

144 The power control system receives its information via an EnFluRi sensor or via another directional sensor or meter.
145 Use of the P1 port of the DNB digital meter is not allowed.

- 146 • The technical characteristics of the power control system (settings, response time) must be minimum
147 compatible with the settings and times of the export limitation relay (see §7.6.4).
- 148 • A type test is performed and a type report is drafted.

149