
Change log

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Technical Requirements for Frequency Containment Reserve Provision in the Nordic Synchronous Area

28 March 2025

Introduction

This change log outlines updates to the *Technical Requirements for Frequency Containment Reserve Provision in the Nordic Synchronous Area* with each new release. The updates aim to improve the document and correct any errors. Only essential changes are recorded; minor adjustments, such as spelling corrections, are excluded. This change log provides readers with transparent insights into the development of these technical requirements.

Changes for version 1.1, released at 28.3.2025

Requirements 1-13

- **Requirement 1: Steady state response for combination of FCR-N + FCR-D.** FCR-N and FCR-D combination requirement is now referred to as Requirement 1b. The requirement is calculated for both ramps 7 and 8. FCR-D term is included in the denominator.
- **Requirement 4: Deactivation.** Requirement is softened. Previous threshold value for the requirement was $1.7|P_{ss,theo}|$. In the updated version it has been changed to $2.5|P_{ss,theo}|$.
- **Requirement 6: Re-activation Static FCR-D.** It is specified in the requirement that the 60 second waiting period of Static FCR-D deactivation is excluded from the grace period.
- **Requirement 7: Deactivation rate Static FCR-D.** The equation is corrected to match the description of the requirement.
- **Requirement 9: Frequency domain performance.** Equation is corrected; terms are absolute values.
- **Requirement 11: Linearity (non-continuous).** The equation is corrected to match the figures illustrating the requirement (Figures 13 and 16). The requirement is written separately for FCR-D up and down.

Test sequences

- **FCR-D ramp test:** Frequency deviation after ramp number 7 is changed from 0.2 to 0.3 Hz.
- **FCR-N Energy management test:** Steps 1 and 6 are held until NEM has been fully activated for 1 minute.

Data (Chapter 6)

- Power baseline and State of Charge are included as mandatory test data signals.
- Signals for AEM (on/off), NEM (on/off), and activated NEM power are to be reported per each reserve product.
- Added Instantaneous active power injection of the station as a recommended signal during operation and testing for entities that have a co-dependent power output with other units at the same substation.
- Signals for AEM (on/off), NEM (on/off), and activated NEM power are recommended as real-time signals, in addition to being mandatory for data logging.
- [Date] is not required information in the test data file name.
- Sine test data logging guidelines are included in the document.

Static FCR-D (Chapter 3.1.3)

- Static FCR-D is allowed to deactivate when the frequency has been in the normal frequency range or in the frequency range of the opposite FCR-D product for 60 seconds.
- Static FCR-D shall pause their deactivation if a frequency deviation occurs during deactivation if technically possible.

- Included illustration of the behaviour of Static FCR-D in Figure 7.

Endurance and limited energy reservoirs, LER (Chapter 3.5)

- Clarified guidance on how the NEM disable limits should be set.
- Clarified equations for the AEM mode (Equations 18-26), including equations for each reserve product.
- Clarified figures for the energy management test sequences.

Start and end of FCR provision during a frequency disturbance (Chapter 3.7)

- Included guidance on expected response when FCR-N or FCR-D provision changes during an ongoing frequency deviation (market time unit change).

Provision from aggregated resources (Chapter 3.11)

- Terms “dynamic/static operation/prequalification” are changed to “flexible/constant operation/prequalification”.