



Connection and operation of energy storage units on the low-voltage network

Practical definition of different connection options

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Content

Index of abbreviations	3
1 Scope	6
2 Normative references	7
3 Terms and definitions	8
4 Technical requirements	10
4.1 General.....	10
4.2 Connection criteria	10
4.3 Balance and monitoring of the feed-in power	11
4.4 Effects on the network load	11
4.5 Reactive power	12
4.6 Dynamic network stability.....	12
4.7 Active power limitation	12
4.8 Active power behaviour at over-frequency and under-frequency	12
4.9 NS protection design.....	13
4.10 Requirements for the energy flow direction sensor (EFD sensor)	13
4.11 Verification of compliance with the technical requirements	18
5 Connection and operation concepts	19
5.1 General.....	19
5.2 Energy storage units without PGP and without consuming system which are directly connected to the network	19
5.3 Power generating plant with energy storage unit and without consumer appliance	20
5.4 Energy storage units in the generation path	21
5.4.1 Energy storage units in the generation path (energy storage units without power consumption from the public network).....	21
5.4.2 Energy storage units in the generation path (energy storage units without supply to the public network)	23
5.5 Energy storage units in the consumption path.....	26
5.5.1 Energy storage units in the consumption path (standard)	26
5.5.2 Energy storage units with two consumption paths (of different tariffs).....	28
5.6 Energy storage units in island operation (in the low-voltage network)	28
5.7 Energy storage units in the consumption path without PGP	29
5.8 More complex connection example (“cascading connection”)	29
5.9 Connection example of an energy storage unit for multiple uses.....	31
5.9.1 Multiple use with control power provision (Example 1).....	32
5.9.2 Multiple use with control power provision (Example 2).....	33
6 Bibliography	35
7 Annex	36
A. Data sheet	36
B. Explanatory notes for the data sheet.....	37

Table of figures

Figure 1: Active power limit curve for the function of the EFD sensor	14
Figure 2: Example of a power generating plant with energy storage unit without power consumption from the network (by design)	16
Figure 3: Example of a power generating plant with energy storage unit without power consumption from the network (by intention)	17
Figure 4: Power generating plant with energy storage unit and without consumer appliance	20
Figure 5: Energy storage units in the generation path	21
Figure 6: Energy storage unit in the generation path with another PV system	22
Figure 7: Energy storage unit in the generation path with CHP system and PV system	23
Figure 8: Energy storage system in the generation path	23
Figure 9: Existing PV system and new PV system with energy storage unit (option a).....	24
Figure 10: Existing PV system and new PV system with energy storage unit (option b).....	25
Figure 11: Energy storage units in the consumption path.....	26
Figure 12: Energy storage units in the consumption path with CHP system	27
Figure 13: Energy storage units in the consumption path.....	28
Figure 14: Energy storage system in the consumption path without PGP	29
Figure 15: Complex example of a connection with several PGP and energy storage unit in the customer installation	30
Figure 16: Complex example of a connection with several PGPs and an energy storage unit in the customer installation at higher power limits	31
Figure 17: Example of multiple use (control power).....	32
Figure 18: Energy storage units with multiple uses by switching	34

Index of abbreviations

AC.....	alternating current
DC.....	direct current
EEG	German Renewable Energy Sources Act (ge: Erneuerbare-Energien-Gesetz)
EFD sensor.....	energy flow direction sensor (ge: Energieflussrichtungssensor (EnFluRi-Sensor))
EnWG	German Energy Industry Act (ge: Energiewirtschaftsgesetz)
ICT	Information and Communication Technology
iMSys.....	smart metering system (ge: intelligentes Messsystem)
KWK-G.....	German Combined Heat and Power Act (ge: Kraft-Wärme-Kopplungsgesetz)
NCP	network connection point (ge: Netzanschlusspunkt (NAP))
PGP	power generating plant (ge: Erzeugungsanlage (EZA))
PGU	power generating unit (ge: Erzeugungseinheit (EZE))
RLM	recording load course measurement (ge: registrierende Lastgangmessung)
SCB	Service Connection Box (ge: Hausanschlusskasten (HAK))
TCC	Technical Connection Conditions
TSO	transmission system operator (ge: Übertragungsnetzbetreiber (ÜNB))

Foreword

Considering the challenges presented by the energy transition process, it can be assumed that, in the near future, a vast amount of energy storage units will be integrated as components into the existing system. Against this background, the currently applicable parameters and requirements need to be reviewed and, if necessary, adapted and extended. The focus regarding the use of energy storage units is currently on the low-voltage and medium-voltage range. For the requirements regarding the network connection and operation of energy storage units, the Technical Rules VDE-AR-N 4100, VDE-AR-N 4105, VDE-AR-N 4110, the European Network Codes and the Technical Connection Conditions shall be taken into consideration.

This Guideline is intended for the technical implementation of the connection and operation of energy storage units on the low-voltage network and as a supplement to VDE-AR-N 4100 and VDE-AR-N 4105. The Guideline is particularly intended for the further development of requirements for energy storage units while also defining additional requirements.

It is primarily intended for network operators, system installers, plant operators and manufacturers of power generating plants or energy storage units in connection with power generating plants.

This Guideline cancels and replaces the Technical Guideline “Anschluss und Betrieb von Speichern am Niederspannungsnetz” (VDE|FNN) of October 2016.

This Technical Guideline has been prepared by the FNN expert network “Energy energy storage”.

The translation of this Technical Guideline is a service of VDE|FNN. In case of doubt the German original shall prevail.