

GC0102 – EU Connection Codes GB Implementation – System Management & Compliance



National Grid

06/07/2017

Proposed Grid Code Modification

- This modification proposes to implement the EU Connection Codes system management and compliance requirements into the Grid and Distribution codes.
- If the existing GB processes does not conflict with the EU Codes then no changes will be made. Any new requirements will have to be defined in the codes.
- Since most of the requirements are similar across the 3 Connections codes, the requirements for RfG will be finalised first and then the same principles can be adopted for DCC and HVDC.
- Any requirements that are defined by the TOs and result in changes to any standards documents will have to be approved through the relevant governance process.

DCC System Management

Technical Requirement	SO	DNO	TO
Article 16 - Protection	As per current requirements with minor changes to ensure consistency with DCC	As per current requirements with minor changes to ensure consistency with DCC	As per current requirements with minor changes to ensure consistency with DCC
Article 17 - Control Requirements	As per current requirements with minor changes to ensure consistency with DCC	As per current requirements with minor changes to ensure consistency with DCC	As per current requirements with minor changes to ensure consistency with DCC
Article 18 - Operational Metering/Data Exchange	As per current requirements with minor changes to ensure consistency with DCC	As per current requirements with minor changes to ensure consistency with DCC	As per current requirements with minor changes to ensure consistency with DCC
Article 20 - Power Quality	As per current requirements with minor changes to ensure consistency with DCC	As per current requirements with minor changes to ensure consistency with DCC	As per current requirements with minor changes to ensure consistency with DCC
Article 21 - Simulation Models	As per current requirements with minor changes to ensure consistency with DCC	As per current requirements with minor changes to ensure consistency with DCC	As per current requirements with minor changes to ensure consistency with DCC

HVDC System Management

Technical Requirement	RfG Type D PPM	HVDC Connection (Title II)	DC Connected PPM (Title III)	Remote End HVDC Connection (Title III)
Article 24 - Power Quality	Not specified in RfG current GB practice would be expected to apply	Specified by RSO in coordination with the TSO. The proposal would be to maintain current GB practice	As per Article 44 – Further consideration required but current GB practice would be assumed to be the starting point	As per Article 50 – Further consideration required but current GB practice would be assumed to be the starting point
Article 28 - Energisation and Synchronisation of HVDC Converter Stations	Synchronisation - As per RfG System Management group	Covered in Article 28 but shall be no greater than 5% of the pre-synchronisation voltage	Covered in Article 41 but shall be no greater than 5% of the pre-synchronisation voltage	As per HVDC Connections (Title II)
Article 29 - Interaction between HVDC Systems or other plants and equipment	Not specified	To be determined	Not specified	As per HVDC Connections (Title II)

HVDC System Management

Technical Requirement	RfG Type D PPM	HVDC Connection (Title II)	DC Connected PPM (Title III)	Remote End HVDC Connection (Title III)
Article 31 - Subsynchronous torsional interaction damping capability	Not specified	To be determined although the current GB requirements would be considered appropriate as a suitable starting point	Not specified	As per HVDC Connections (Title II)
Article 32 - Network Characteristics	Not specifically covered although loose reference is made in the fault ride through requirements	To be determined	As per HVDC Code (Art 42) but broadly the same as HVDC Connections (Title II)	As per Article 49 which links back to the requirements for DC Connected Power Park Modules
Article 33 - HVDC System Robustness	Not specified	To be determined but a suitable starting point would be the GB SQSS	Not specified	As per HVDC Connections (Title II)
Article 34 - Electrical Protection Schemes and Settings	As per RfG System Management	The philosophy is broadly similar to RfG but further assessment is required.	As per RfG but note additional requirements in Art 43 of HVDC Code	As per HVDC Connections (Title II)

HVDC System Management

Technical Requirement	RfG Type D PPM	HVDC Connection (Title II)	DC Connected PPM (Title III)	Remote End HVDC Connection (Title III)
Article 35 - Priority Ranking of Protection and Control	As per RfG System Management	The philosophy is broadly similar to RfG but further assessment is required.	As per RfG but note additional requirements in Art 43 of HVDC Code	As per HVDC Connections (Title II)
Article 36 - Changes to protection and control schemes and settings	As per RfG System Management	The philosophy is broadly similar to RfG but further assessment is required. Control Mode and associated setpoint changes by remote operation need further consideration	As per RfG	As per HVDC Connections (Title II)
Article 51 - Operation of HVDC Systems	Not applicable	Ability to send and receive signals	Not applicable	As per HVDC Connections (Title IV)

HVDC System Management

Technical Requirement	RfG Type D PPM	HVDC Connection (Title II)	DC Connected PPM (Title III)	Remote End HVDC Connection (Title III)
Article 52 - Parameters and Settings	Not directly applicable but broadly linked to Art 15(5)(c).	To be determined but expected to require additional general text in the GB Grid Code	As per RfG	As per HVDC Connections (Title IV)
Article 53 - Fault Recording and Monitoring	RfG is different from HVDC but the general requirements and principles for fault recording and monitoring are broadly similar to RfG	To be covered in System Management group	As per RfG	As per HVDC Connections (Title IV)
Article 54 - Simulation Models	RfG is different from HVDC but the general requirements and principles for modelling are broadly similar to RfG	To be covered in System Management group	As per RfG	As per HVDC Connections (Title IV)