

GC0096 Workgroup Meeting 2

High Level Technical Requirements (incl DCC references)

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- Frequency Range (CC.6.1.3)
 - Voltage Range (CC.6.1.4)
 - Power Quality – Direct Connections only (CC.6.1.5 – CC.6.1.7)
 - Requirements applicable to directly connected storage facilities (eg protection / equipment standards) (CC.6.2)
 - Reactive Capability (CC.6.3.2)
 - Power Output with falling frequency (CC.6.3.3)
 - Reactive Capability for HV System voltage changes (CC.6.3.4)
 - Black Start (Not Mandatory) (CC.6.3.5)
 - Ability to modulate Active and Reactive Power in response to frequency and voltage variations (CC.6.3.6)
 - Frequency Response (CC.6.3.7)
 - Voltage Control (CC.6.3.8)
 - Steady State Load Inaccuracies (CC.6.3.9)
 - Negative Sequence Loading (CC.6.3.10)

Technical Requirements (2)

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- Neutral Earthing (CC.6.3.11)
 - Fast Start Capability (CC.6.3.14)
 - Fault Ride Through (CC.6.3.15)
 - Damping Control Facilities (applicable only to certain types of Storage Plant eg Batteries employing DC Converters) (CC.6.3.16)
 - System to Generator Operational Schemes (CC.6.3.17 – CC.6.3.18)
 - Frequency Sensitive Relays (CC.6.4.3 / CC.A.5 / OC6.6)*
 - Control / System Telephony (CC.6.5.2)
 - Operational Metering (CC.6.5.6)
 - Electronic Data Communication Facilities (CC.6.5.8)
 - Fax Machines (CC.6.5.9)
 - Busbar Voltage – direct connections only (CC.6.5.10)
 - System Monitoring (CC.6.6)
 - Site related conditions (applicable only to direct connections (CC.7)
 - Ancillary Services (CC.8)

DSR DCC requirements

Articles 27 - 30

- **Remotely controlled**
 - Demand response active power control
 - Demand response reactive power control
 - Demand response transmission constraint management
- **Autonomously controlled**
 - Demand response system frequency control
 - Demand response very fast active power control

Articles 27 - 30 – Generic Requirements (1)

- Operation across frequency range
- Operation across voltage range
- Ability to receive instructions and adjust power consumption within a time period specified by the relevant network operator
- Rate of change of frequency withstand capability calculated over a 500ms timeframe
- Ability to connect or disconnect static compensation facilities either individually or commonly as part of a demand aggregation scheme through a third party or via the relevant TSO.
- For frequency control - be equipped with a control system that is insensitive within a deadband around 50Hz as specified by the relevant TSO
- Upon return to nominal frequency within the deadband initiate a random time delay up to 5 minutes before resuming normal operation.

Articles 27 - 30 – Generic Requirements (2)

- Equipped with a controller that measures actual system frequency. The re-refresh rate shall be no more than 0.2 seconds.
- Capable of detecting a change in system frequency of 0.01Hz in order to give an overall linear proportional system response
- Demand response very fast active power control – optional
- Change of Active Power control related to rate of change of frequency for that portion of its demand
- The operating principles of the control system and its performance parameters
- The response time for very fast active power control which shall be no longer than 2 seconds.