



Expert Group Criteria for significant modernisation

Content of report

The EG Group intensively examined the wording of the NCs

The Expert Group compared the legal wording of the NC general terminology relating to modification of equipment, particularly EN 13306.

This provided a clear background in ensuring that no nuance of the wording in the NCs was overlooked.

The Expert Group collected existing practices from member states.

Plain text version of Art. 4 of RfG agreed by the EG

If a power generating module is modified such that (a) this is a clear investment by the owner in the capabilities of the power generating module and (b) this has a material effect on its electrical and grid-dynamic characteristics, then the investment should include bringing the power generating module up to NC RfG standards.

Any new parts or components should, as far as possible, comply with the requirements of the NC RfG even if the module cannot do so, such that if compliance is required in the future, these replacement parts will not be a block on such compliance. This does not apply to recognized spare parts or maintenance activities.

Plain text version of Art. 4 of DCC agreed by the EG

If:

- i. a transmission connected demand facility,
- ii. a transmission connected distribution facility,
- iii. a distribution system (including a closed distribution system),
- iv. a demand unit within an installation connected at 1kV or above

is modified such that (a) this is a clear investment by the owner in the capabilities of any item (i) to (iv) above and (b) this has a material effect on its electrical and grid-dynamic characteristics, then the investment should include bringing the item up to compliance with the requirements of the DCC.

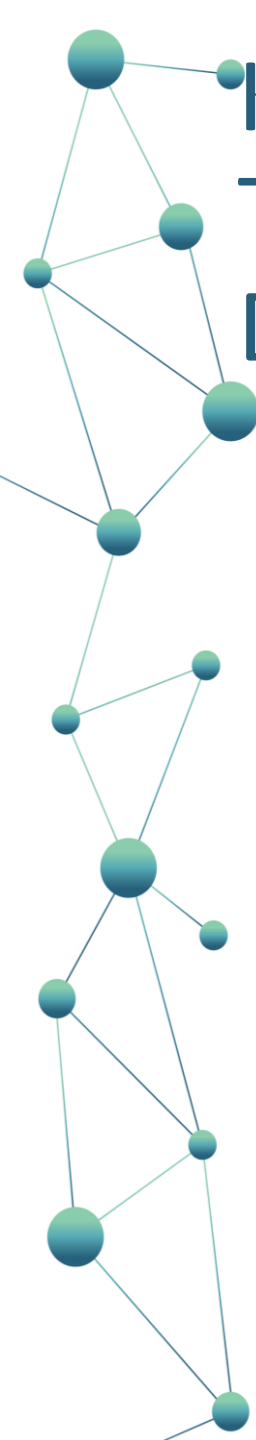
Any new parts or components should, as far as possible, comply with the requirements of the NC DCC even if the whole facility, system or unit cannot do so, such that if compliance is required in the future, these replacement parts will not be a block on such compliance. This does not apply to recognized spare parts or maintenance activities.

Fundamental principles of retrospective compliance chosen

The EG agreed that the principle in determining the need for retrospective compliance is the material change of one or more *key electrical characteristics*.

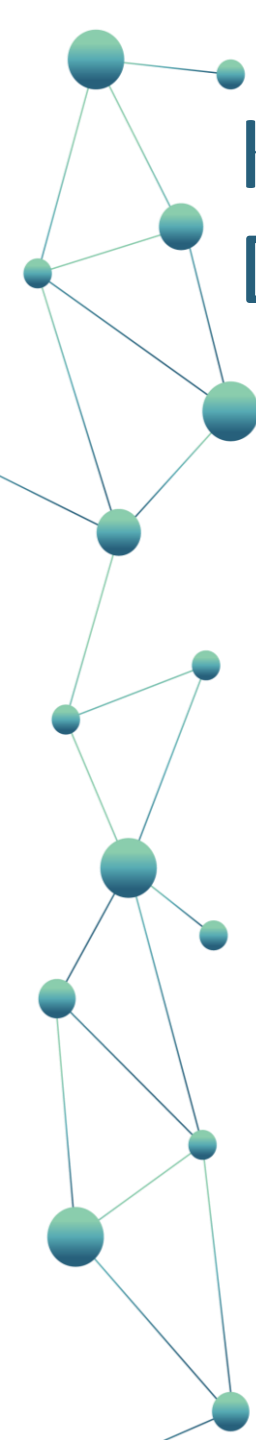
Key electrical characteristics of power generating modules are

- The maximum capacity of the module,
- The module's impedance as this affects its contribution to fault currents and stability,
- Its reactive capability, if the relevant system operator is relying on particular reactive power requirements,
- Its inertia, or other appropriate intrinsic characteristic which affects its stability.



Key electrical characteristics of Transmission Connected Distribution or Demand Facility are

- The transformer capacity connecting the facility to the transmission system
- The fault level contribution from the facility
- Increased power factor capability (ie an increase in the capacity to generate or absorb reactive power)



Key electrical characteristics of Distribution Systems, including CDS, are

- beyond a threshold defined on national level by the relevant TSO(s)

Triggering the compliance of a whole distribution system, given how extensive they are, should not be undertaken except in exceptional circumstances. Of course the obligation that new components of a distribution system should meet the DCC requirement in isolation means that progressively non-compliant parts of distribution systems will be replaced naturally.



Key electrical characteristics of Demand units providing demand response

- A change in their frequency range
- A change in the control system affecting the delivery of the service
- A change in capacity



Key electrical characteristics of HVDC installations

- Maximum power transmission capability of HVDC installation
- Increase in converters' maximum current
- Change in overall reactive power capability

Pro-rata requirements are applied to new generators or inverters (units)

If only a part of units in an existing PGM is exchanged and thresholds defined by the relevant TSO are not reached, requirements should be applied to the whole PGM on a pro rata basis in the ratio of MW of new units to MW of total units.

The EG gives guidance on how partial compliance can be assessed regarding reactive power.