Topic Power Quality :
Introduction by Elia – Presentation of the initial proposal

WG Belgian Grid

25/03/2016

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HVDC Code

- Article 24

Article 24
Power quality

An HVDC system owner shall ensure that its HVDC system connection to the network does not result in a level of distortion or fluctuation of the supply voltage on the network, at the connection point, exceeding the level specified by the relevant system operator in coordination with the relevant TSO. The process for necessary studies to be conducted and relevant data to be provided by all grid users involved, as well as mitigating actions identified and implemented, shall be in accordance with the process in Article 29.

- Article 29

Article 29
Interaction between HVDC systems or other plants and equipment

1. When several HVDC converter stations or other plants and equipment are within close electrical proximity, the relevant TSO may specify that a study is required, and the scope and extent of that study, to demonstrate that no adverse interaction will occur. If adverse interaction is identified, the studies shall identify possible mitigating actions to be implemented to ensure compliance with the requirements of this Regulation.

2. The studies shall be carried out by the connecting HVDC system owner with the participation of all other parties identified by the TSOs as relevant to each connection point. Member States may provide that the responsibility for undertaking the studies in accordance with this Article lies with the TSO. All parties shall be informed of the results of the studies.

3. All parties identified by the relevant TSO as relevant to each connection point

HVDC Code

- Article 42 (c)

Article 42
Network characteristics

With regard to the network characteristics, the following shall apply for the DC-connected power park modules:

(a) each relevant system operator shall specify and make publicly available the method and the pre-fault and post-fault conditions for the calculation of minimum and maximum short circuit power at the HVDC interface point;

(b) the DC-connected power park module shall be capable of stable operation within the minimum to maximum range of short circuit power and network characteristics of the HVDC interface point specified by the relevant system

(c) each relevant system operator and HVDC system owner shall provide the DC-connected power park module owner with network equivalents representing the system, enabling the DC-connected power park module owners to design their system with regard to harmonics;

HVDC Code

- Article 44

Article 44
Power quality

DC-connected power park modules owners shall ensure that their connection to the network does not result in a level of distortion or fluctuation of the supply voltage on the network, at the connection point, exceeding the level specified by the relevant system operator, in coordination with the relevant TSO. The necessary contribution from grid users to associated studies, including, but not limited to, existing DC-connected power park modules and existing HVDC systems, shall not be unreasonably withheld. The process for necessary studies to be conducted and relevant data to be provided by all grid users involved, as well as mitigating actions identified and implemented, shall be in accordance with the process in Article 29.

- Article 50

Article 50
Power quality

Remote-end HVDC converter station owners shall ensure that their connection to the network does not result in a level of distortion or fluctuation of the supply voltage on the network, at the connection point, exceeding the level allocated to them by the relevant system operator, in coordination with the relevant TSO. The necessary contribution from grid users to the associated studies shall not be unreasonably withheld, including from, but not limited to, existing DC-connected power park modules and existing HVDC systems. The process for necessary studies to be conducted and relevant data to be provided by all grid users involved, as well as mitigating actions identified and implemented shall be in accordance with the process provided for in Article 29.

DCC Code

- Article 20

Article 20
Power quality

Transmission-connected demand facility owners and transmission-connected distribution system operators shall ensure that their connection to the network does not result in a determined level of distortion or fluctuation of the supply voltage on the network, at the connection point. The level of distortion shall not exceed that allocated to them by the relevant TSO. TSOs shall coordinate their power quality requirements with the requirements of adjacent TSOs.

As is – for TSO and DSO (Synergrid point of view)

1. For grid users :

All articles related to Power Quality are already covered by prescriptions Synergrid C10/17, which is the reference today for all grid users for Power Quality aspects :

Prescriptions Power Quality pour les utilisateurs raccordés aux réseaux publics haute et moyenne tension

Domaine d'application (C10/17- révision 8 mai 2009)

Les prescriptions Power Quality ci-après sont applicables pour tous les *utilisateurs de réseau* raccordés aux réseaux électriques publics haute et moyenne tension. Ce document constitue le fil conducteur recommandé pour le raccordement d'installations perturbatrices sur le réseau électrique. Il contient les prescriptions concernant les niveaux de perturbations permis (*harmoniques*, *flicker*, *variations de tension* et *déséquilibre*) pouvant être occasionnés par un utilisateur du réseau et précise comment s'effectuent l'évaluation et le contrôle des niveaux de perturbation.

2. For DSO :

Power quality requirements are covered by the collaboration agreement between Elia and the DSO, following the norms.

To be : next steps

The document (GU/DSO) based on IEC norms could evolve if the implementation of the NCs require it.

➔**Proposal**:

- The sessions of EG meetings on “power quality” (26/4, 30/5 and 13/9) are therefore no longer needed.
- WG Belgian Grid will be informed when Elia would learn more about amending the IEC norms following the NCs