

Title: Interpretation of article 15 in NC DCC – Belgian DSOs

Topic: correct understanding of article 15.1 (f) and 15.2 of the NC DCC

Date: 2016-09-09

Relevant articles from the NC DCC:

Article 15.1

(...)

(e) the reactive power range requirement values shall be met at the connection point;

(f) by way of derogation from point (e), where a connection point is shared between a power generating module and a demand facility, equivalent requirements shall be met at the point defined in relevant agreements or national law.

Article 15.2

The relevant TSO may require that transmission-connected distribution systems have the capability at the connection point to not export reactive power (at reference 1 pu voltage) at an active power flow of less than 25 % of the maximum import capability. Where applicable, Member States may require the relevant TSO to justify its request through a joint analysis with the transmission-connected distribution system operator. If this requirement is not justified based on the joint analysis, the relevant TSO and the transmission-connected distribution system operator shall agree on necessary requirements according to the outcomes of a joint analysis.

Questions:

For article 15.1.f:

Is this text applicable to DSOs?

The connection point between a distribution grid and a transmission grid (typically a transformer station) will most probably always be a 'mixed' connection point. Power generating modules and demand facilities will be connected at the same connection point, not necessarily directly, but at least indirectly via the distribution lines connected to that connection point.

So, one could argue that article 15.1.f would be applicable to (almost) all connection points between the distribution and the transmission grid...

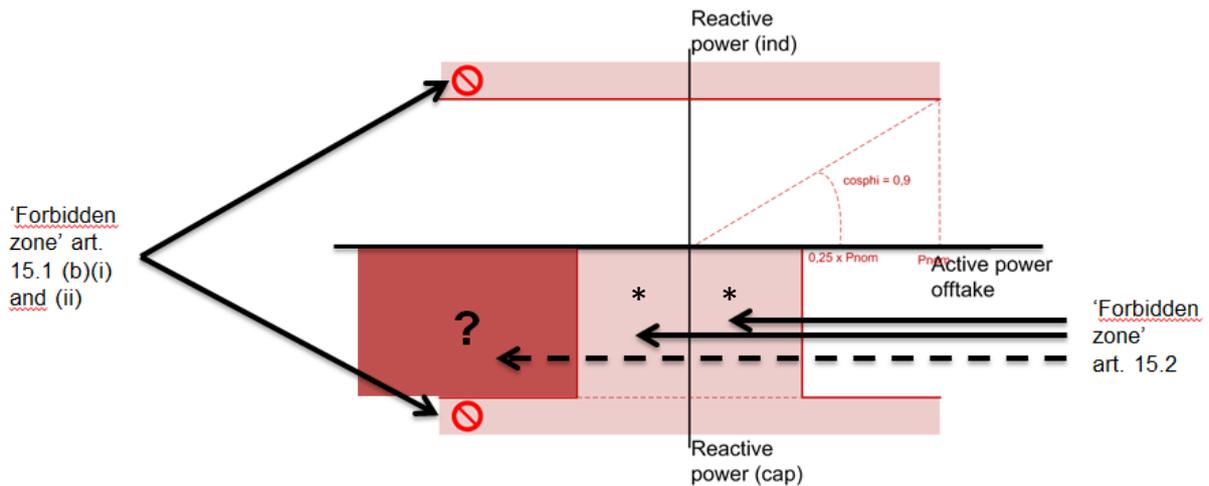
... but since the exact phrasing is not mentioned in plural but in singular (power generating module and demand facility) we conclude that the paragraph will not be applicable to the DSOs' connections points to the transmission grid.

Can this latter statement be confirmed ?

For article 15.2:

The article is clearly applicable to the DSOs if the relevant TSO requires to have this capability.

We could 'translate' this article (and article 15.1 (b)) in the following figure (see next page).



Is it correct to state that in relation to article 15.2 the 'forbidden zone' (= not export reactive power) is limited to the light red zones (*) as indicated above and does not concern the dark red zone.

Can this statement be confirmed ?

Note regarding the dark red zone:

If there is a power flow from the DSO to the TSO (export power to the TSO), one could mathematically state, since the power flow has a negative sign, that the dark red zone represents a power flow of less than 25% of the maximum import power (e.g. $-75\% < 25\%$).