NC HVDC

VGBs Stakeholder Input

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MESSAGES SEND ON 23RD OF MAI 2013

Presentation given 23rd of Mai 2013, Stakeholder Workshop, Brussels:

"• **TSOs** approach is from a system need point of view
• *Aim: In view of changes & new challenges, maintain level of security of supply*
• *Gradual sharing of services by all Users previously delivered by Synchronous Generators."*

"Potentially large financial and environmental consequences (miss EU targets)
• Services provided previously by SG, if essential, has to be delivered by others"

This approach seem to exclude the TSOs from their duty to take care by themselves to provide the products needed to operate their system. TSOs have the obligation to provide by themselves the system needs to maintain the level of security of supply needed. To shift these obligation only on all users – that is not acceptable and therefore Grid Operators have to be included to find efficient solutions!

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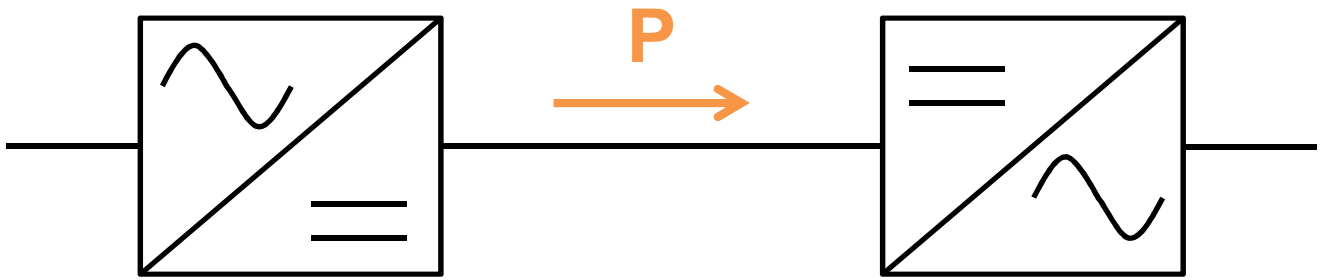
"Can we wait with specifying requirements for HVDC Grids and still deliver the vision of the future?"

When there is a vision for the future (here DC Grids at North Sea area) then there need to be requirements set up under which conditions those visions can be achieved.

It is necessary to set up at least operational requirements and requirements at the grid connection points towards the onshore AC system.

COMPLIANCE WITH OTHER NC´S

Proposal - NC HVDC base on the NC RfG and DCC:



´virtual load´
NC DCC

´virtual generation´
NC RfG

Non discriminatory approach!
NC HVDC additional requirements defining quality/behaviour at converter stations grid connection point (harmonics, symmetric, further requirements easy to achieve and going beyond the NCs RfG and DCC, usage of the additional opportunities of converters)

IMPACTS OF HVDC ON AC SYSTEM

No reduction of grid quality:

Appropriate level of harmonics based on the operating frequency range

Level of asymmetry in phases of AC system as result of 2 phase DC converters

Impact of converter stations on other grid users (torsional stress, higher and wider demand of reactive power)

Investigation on alternative solutions to provide inertia needed for system operation

LINK TO OPERATIONAL ASPECTS (N-1)

Embedded systems (n-1) by AC system

HVDC links between different synchronous areas and HVDC links to offshore PPM (N-1):

i.e. limiting the maximum power loss to 1500 MW or
i.e. increase reserves (NC LFC&R).