MEDOW
MULTI-TERMINAL DC GRID FOR OFFSHORE WIND

# REPORT

**To:** MEDOW

**From:** Abel Ferreira

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Elia group consists in the Belgium TSO Elia and one of the Germany's TSOs 50 Hertz (western part of Germany). Belgium besides having a common border with Germany, Luxembourg, France and Netherlands only connects its AC transmission system to the last two countries. Elia own several AC transmission interconnections in Belgium- France and Belgium-Netherlands borders. In the Belgium-France interconnector three 380 kV and two 220 kV transmission lines cross their borders, which together offer a physical capacity of 5 GW. On the other hand, the Belgium-Netherlands border is crossed by three 380 kV AC transmission cables adding more 6 GW of power capacity.

Elia balances the frequency between the production and consumption in the Belgium grid. However, due to the high power consumption by furnaces industries, the TSO have installed 30 MW of gas power plants nearby to the necessary companies, which facilities the perturbations compensation caused when they connect/ disconnect to/from the grid.

Regarding the voltage management were installed in the transmission network scattered shunt compensators. Those devices, as the name shows, compensate the voltage drop downs by means of capacitor banks (shunt capacitive compensation), also the voltage increases by means of shunt reactors (shunt inductive compensation).

The TSO has the normal planing of the transmission network depending on the time variation load flows. However changes must be made for devices preventive management or displacement in case of equipment malfunction. Either has some restrictions, for instance during the winter. The southeastern part of Belgium is very affected by the snow which brings a big impact on the transmission lines/support equipment. The mechanical efforts felt by transmission towers due to the lines weight is a problem. Therefore, the TSO establishes priority lines during special seasons, like those ones, in which the power flow is increased in order to melt the ice/ snow.