

## **RTE and Terna**

# Piedmont-Savoy HVDC Line

A New Power Highway Through The Alps To Build Europe's Energy Grid





190 km underground HVDC line, 95 km in France and 95 km in Italy.



Traffic on Toll Road in the Italian Alps near border France and Mont Blanc

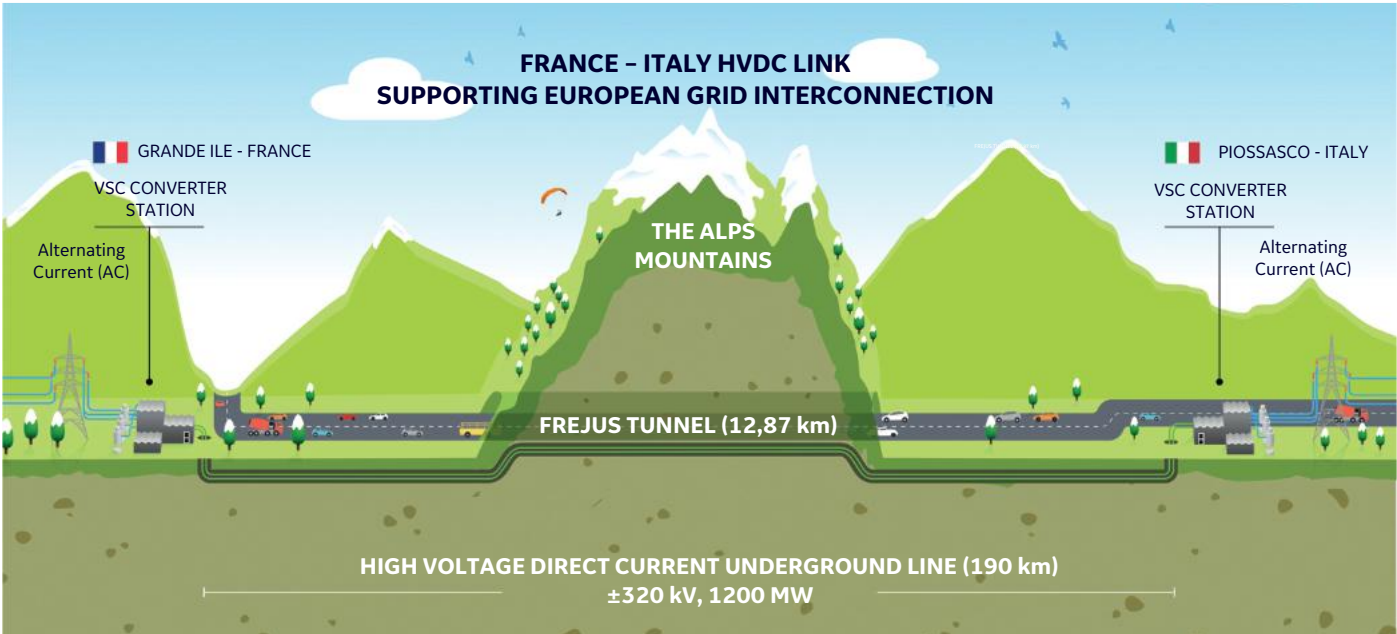
## Challenge

Europe has many challenges with its multiple grids. The continent is transitioning towards better integration of renewable power, reducing carbon footprint and increasing energy trading capacity between countries while at the same time reinforcing its existing grids to make them more robust. In a great step towards resolving all of these challenges, transmission operators RTE (France) and Terna (Italy) have decided to build the world's longest underground High Voltage Direct Current (HVDC) cable interconnection. This link - at 190 km - will join the French and Italian electricity networks under the Alps.

To preserve the unique geographical landscape of the Alps, GE's HVDC technology was chosen as it allows the use of a hidden underground land cable to transmit higher level of power. The link will significantly increase power capacity between the two countries and grant Italy with greater access to France's hydro and nuclear generated power. In turn France will be able to tap into Italy's solar energy.

GE's compact HVDC Voltage Source Converter (VSC) solution will increase the exchange capacity between France and Italy by 1200 MW, bringing the total capacity up to 4400 MW. For much of the route, the cable will use existing underground infrastructure.

HVDC Voltage Source Converter (VSC) Stations To Convert AC and DC For Optimal Power Transmission





## The Solution

GE will design, supply, and install a High Voltage Direct Current (HVDC) Voltage Source Converter (VSC) solution, including the engineering, procurement, manufacturing, testing, civil works, installation and commissioning of 2 x 600 MW, +/- 320 kV converter stations, together with maintenance for the converter station in France.

Two compact HVDC VSC converter stations, located at each end of the 'Piedmont-Savoy' HVDC line will convert Alternating Current (AC), from the French local network, to Direct Current (DC) for transmission and from DC to AC at the other terminal to feed the transmitted power into the Italian local network and vice versa.

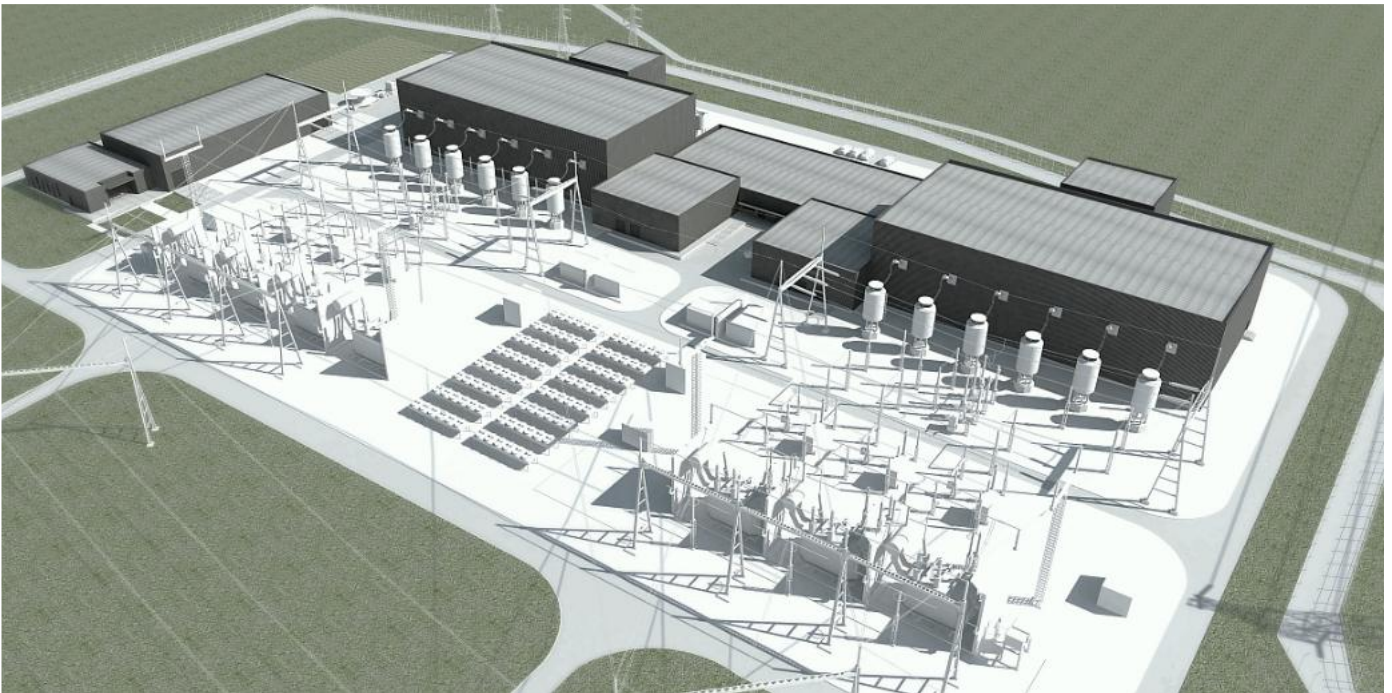
Due to its size, the Italian converter can be built within the existing substation in Piosasco, saving on further land use for infrastructure. In France, the VSC will be built next to the substation of Grande Ile.

## The Benefits

GE HVDC VSC solution provides two-way transmission of the direct current and its small footprint preserves the Alps fragile ecosystem. VSC technology also offers reactive power management and adjustment options. This improves power quality and enhances network security as it allows a grid to recover from total loss of local power.

The VSC's reliability helps to reduce any system outages. HVDC VSC is designed with the intermittent nature of wind and solar energy in mind, capturing energy when and where it is available – at the source.

GE's HVDC VSC solution has been chosen to allow RTE and Terna to manage their power flow with greater efficiency, reliability flexibility and with sustainability in mind.



*Grande Ile Converter Station, France*

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Imagination at work