

*Name: REMOTE - Remote area Energy supply with Multiple Options for integrated hydrogen-based TEchnologies*

*Award category: Innovation*

*Organisation: Politecnico di Torino*

*Location: Torino, Italy*

*Other countries involved: Norway, Greece, France, Belgium, Denmark*

*Duration: 2018-2021*

*Website: <https://www.remote-euproject.eu/>*

## **Factsheet:**

### **REMOTE - Energy security in challenging locations**

#### **Combining renewables and energy storage**

From villages nestled in mountain ranges to islands far from the mainland, Europe's numerous remote locations may not be connected to electricity grids or may have unreliable connections. Many of these locations rely on diesel-powered generators as a back-up source of power when local renewable energy is scarce. This may happen when the sun doesn't shine, or the wind doesn't blow. However, diesel is a well-known pollutant and delivering it to remote locations is also expensive.

Aiming to help remote locations become self-sufficient in energy and contribute to the EU's renewable energy and climate goals, the Horizon 2020-funded project REMOTE has developed an innovative technology to store energy. The system, built by the REMOTE project team, helps store locally produced renewable energies using batteries and hydrogen. This storage technology works with any source of renewable power from wind to biomass. It allows excess power to be stored when a lot of renewable energy is being produced. So, when on a windless cloudy day energy demand is high, but immediate supply low, stored energy can be used by local communities.

"Intermittent renewable energy can be integrated with hydrogen and battery storage to provide a viable, reliable, cost-effective and decarbonised alternative to onsite electricity generation," says Domenico Ferrero, from the Politecnico di Torino. "We're testing our concept in a wide range of conditions from sunny, hot southern Europe to windy and cold Scandinavia, and we're expecting all sites to experience an almost complete substitution of fossil fuels," he adds.

#### **4 test sites across Europe**

REMOTE is rolling-out its hydrogen and battery-based energy storage technology at 4 test sites across Europe with different environmental and technological characteristics. Ginostra is a small village on the island of Stromboli in the South of Italy. Here, energy storage technology is connected to local solar panels which produce electricity.

Over in Agkistro, Greece, the project is working at an industrial site. The site has its own micro-grid powered by hydro-electric generators which will be connected to the energy storage technology.

Meanwhile in Ambornetti, a village in the Italian Alps, the REMOTE energy storage technology will be connected to different types of renewable energy. The village makes its own electricity and heat using solar panels and biomass.

Over on Froan Island in Norway, the energy storage technology will be connected to the island's own micro electricity grid. Here, islanders get a lot of their electricity from local solar panels and wind turbines.

“Many people are happy to move away from dependency on diesel generation and save money by being able to store the renewable energy they generate but do not need to use immediately. In Norway our technology could also avoid the cost of replacing an undersea cable, while in Ginostra it will help reduce the impact of diesel pollution in a nature protection area,” says Ferrero.

### **Renewable energy game changer**

REMOTE's expected impact will be to reduce energy imports into remote locations, cut the use of fossil-fuels by 95-100% at the 4 demonstration sites and improve energy security and independence.

There are around 10,000 populated islands around the world, home to around 750 million islanders, and many of these rely on diesel generators to produce electricity. Thousands of mountain communities also depend on diesel generators.

REMOTE's technology is directly relevant to these isolated communities that could shift to a combination of renewables and energy storage to meet their local energy needs and join the energy transition towards renewables.