SMart IsLands Energy system

Who?

The Smart Islands Energy System (SMILE) project is a collaboration of nineteen partners from various European countries and it is funded by the European Union's Horizon 2020 research and innovation programme under grant agreement No 731249.

What?

SMILE will demonstrate nine different smart grid technologies, which are energy networks that can automatically monitor energy flows and adjust the changes in energy supply and demand accordingly.

SMILE technological solutions vary from integration of battery technology, power to heat, power to fuel, pumped hydro, electric vehicles, electricity stored on board of boats, an aggregator approach to demand side management (DSM) and predictive algorithms.

Where?

The Smart Islands Energy Systems (SMILE) project will implement three large-scale pilot projects in different regions of Europe with similar topographic characteristics but different policies, regulations and energy markets: Madeira (Portugal), Orkney (United Kingdom) and Samsø (Denmark).

Each case study represents an important energy challenge that is common to several locations in Europe, on islands as well as on the mainland.
Madeira is a total energy island, which means that it is not connected to any other landmass electrically.
Orkney has some of the highest recorded levels of "fuel poverty" in the UK.
Samsø's energy demand is very consistent as it is dominated by the demand from berthed yachts and associated tourism.

When?

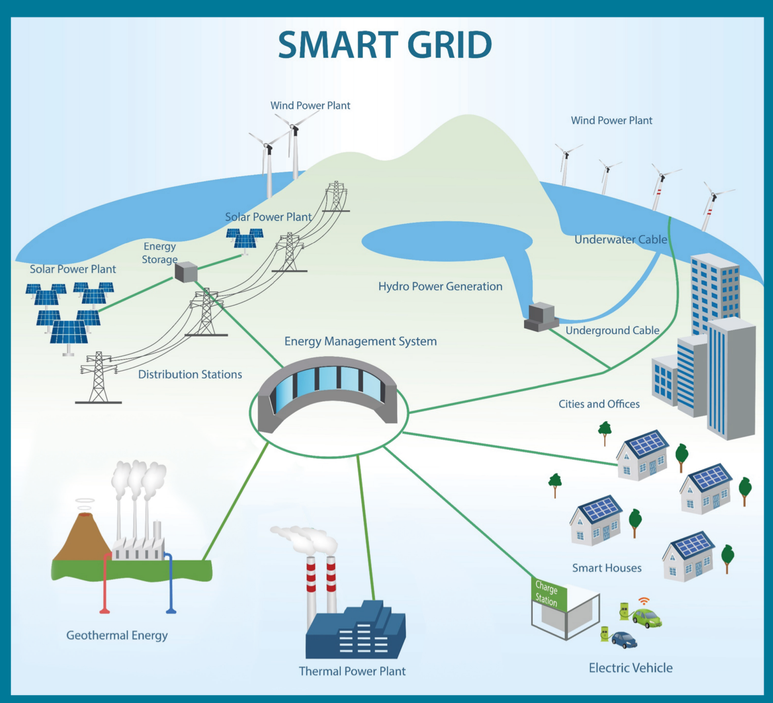
SMILE project began in 2017 and it will end in 2021.

Why?

The scale of these pilot projects enables to test the different components and systems in the field in vigorous environmental and operational conditions, while reducing the impacts of possible failures of integrating these systems into an existing infrastructure.

Expected key outcomes of these projects are:

- to gather experience with new smart grid architectures in preparation of larger scale deployments,
- to help grid operators and suppliers optimize the requirements and design of these systems, hence the cost of large scale deployments,
- to propose innovative business models and regulations enabling the deployment of these systems at acceptable costs for all stakeholders.
- Replication of the developed technologies on 3 greek islands.



Smart grids are energy networks monitor energy flows and adapt the changes in energy supply and demand accordingly. When connected with smart metering systems, smart grids provide consumers and suppliers information on real-time consumption. With smart meters, consumers can adapt – in time and volume – their energy usage to different energy prices throughout the day, saving money on their energy bills by consuming more energy in lower price periods.

Technology Developments

Samsø: Battery energy systems : in design phase | Energy management system Smart meter : were installed some at the Ballen Marina | Heat pump EV Charging points : installed | PV panels : 12kW PV plan installed at ferry harbor Telemetry grid-ICT

Madeira: Battery energy systems | Energy management system Smart meter | Heat pump Phase change material | Hot water storage Electric vehicle | EV Charging points Behaviour algorithm software and Telemetry grid-ICT

Orkney Islands: Battery energy systems | Energy management system | Smart meter : in 12 selected houses SM have been installed | Electric vehicle : a company with a E-Scooter fleet and the EEM EV has been selected | EV Charging points : EEM, PRSMA and M-ITI have started the integration of two possible monitoring solutions. Critical grid infrastructure for its location and specification were identified | Telemetry grid-ICT : restful cloud "brain" in development

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