

Smarter systems.

Empowered citizens.



WiseGRID will provide a set of solutions and technologies to increase the smartness, stability and security of an open, consumer-centric European energy grid. The project will combine an enhanced use of storage technologies, a highly increased share of RES and the integration of charging infrastructure to favour the large-scale deployment of electric vehicles.



wisegrid.eu

WiseGRID uniqueness

WiseGRID goes beyond empowering prosumers.

On top of having a consumer-centric approach, the project will make a difference in the market by delivering tools that facilitate the creation of a healthy, open market where not only 'traditional' utilities but also players such as electric cooperatives and SMEs can play an active role, contributing therefore effectively to the transition to energy democracy.

Objectives

Demand-response

With different technologies such as smart metering, smart home appliances, batteries, EVs, etc., WiseGRID wants to create a win-win situation for both grid and consumers, allowing active participation, protection and empowerment of the European consumers and prosumers.

Smartening the distribution grid

WiseGRID will implement technologies and methods to gain advanced monitoring and awareness of variable distributed generation, integration of Virtual Power Plants and microgrids as active balancing assets.

Integration of renewable energy storage systems in the network

Batteries and heat accumulators will be deployed in the framework of WiseGRID in order to manage and balance the network optimally, responding better to changes in demand and reducing at the same time losses in distribution.

Smart integration of electric mobility services

Electric mobility services such as charging and discharging, providing storage capacity and electricity supply to the grid, including the possible use of their batteries as storage systems will also be tested within WiseGRID.

WiseGRID Tools

WiseGRID results will be packaged in the form of nine different technological results / products:



WG Cockpit

Application for DSOs or microgrids Operators in order to control, manage and monitor their own grid in order to improve flexibility, stability and security of their network.



WG IOP

(WiseGRID Inter-Operable Platform) ICT platform for real time monitoring capable of processing the heterogeneous and massive data stream coming from the distributed energy infrastructure.



WiseHOME

Application for individual domestic consumers and prosumers to become active energy players.



WiseCOOP

Application for energy retailers, aggregators, local communities and cooperative



WiseCORP

Corporate application for businesses, industries, ESCOs and public facilities consumers and prosumers to become smarter energy players.



WG STaaS/VPP

(WiseGRID energy Storage as a Service / Virtual Power Plants): service by which consumers / prosumers can easily offer to the market their unused storage or generation capacity.



WG RESCO

(WiseGRID Renewable Energy Service Company): tool for enabling the provision of energy to the consumers from RES making possible that the household/businesses serviced do not own and maintain the generation equipment



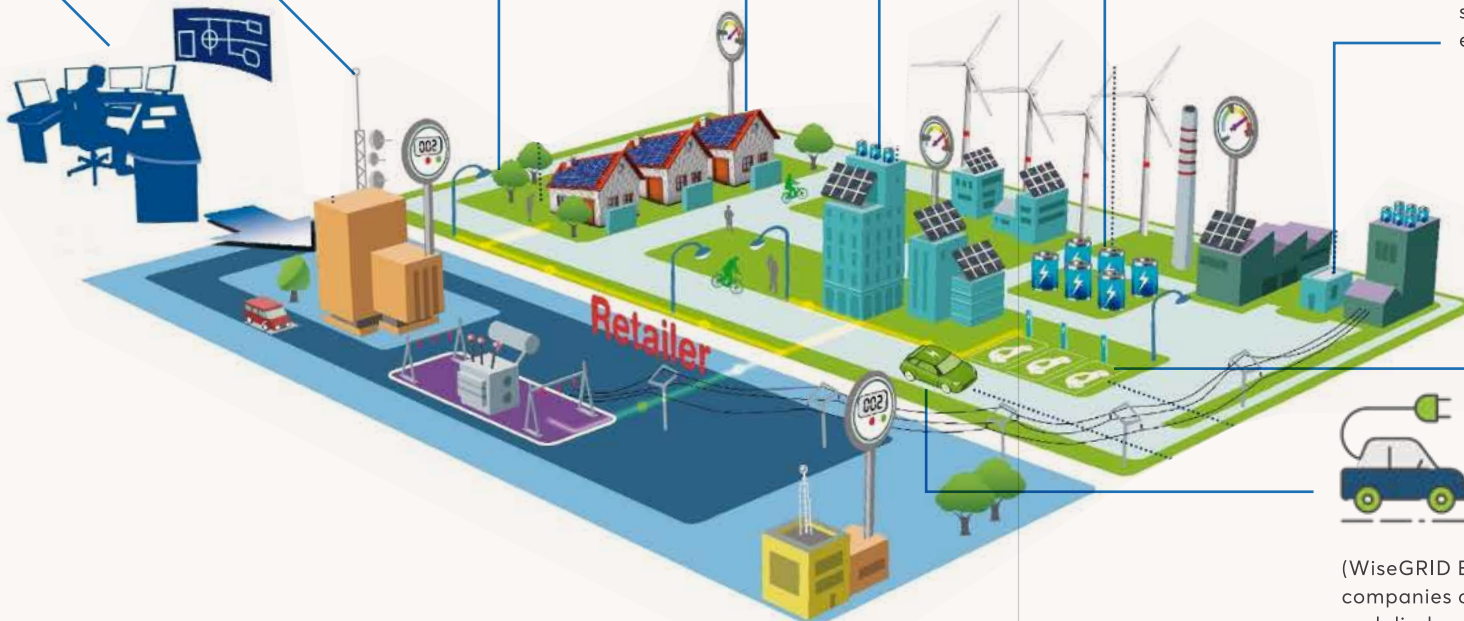
WG FastV2G

EV charging station that will make possible to use EV as dynamic distributed storage devices, feeding electricity stored in their batteries back into the system.



WiseEVP

(WiseGRID Electric Vehicle Platform): tool for vehicle-sharing companies and e-vehicles managers to optimize the smart charging and discharging of the EVs and reduce energy billing.



Kythnos Pilot Site

Kythnos is not interconnected to the mainland grid or any other neighbouring islands' electricity grids; hence Kythnos Island's electrical system constitutes a single-island insular system. The higher integration of RES on Kythnos (and other non-interconnected Greek islands) resulting in increased decarbonisation levels is limited by the small size and lack of flexibility of the electricity system. All grid balancing and flexibility needs to be provided on island, a challenging task.

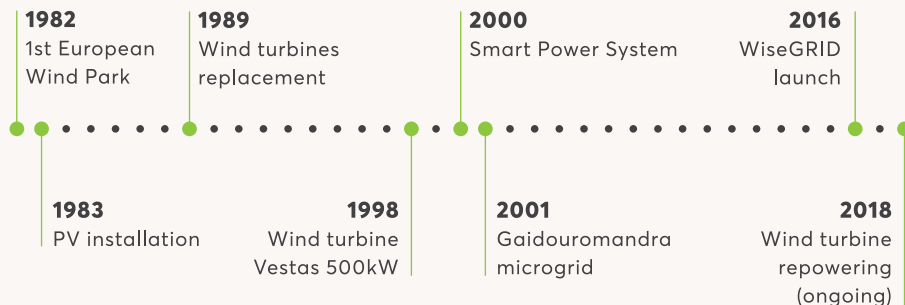
WiseGRID foresees the integration of grid management systems, supply and demand forecasting, demand response, energy storage, and flexibility services in order to facilitate the integration of higher RES shares, reduce RES curtailment, reduce fossil fuel consumption as well as smooth electricity demand in Kythnos.

Infrastructure in Kythnos

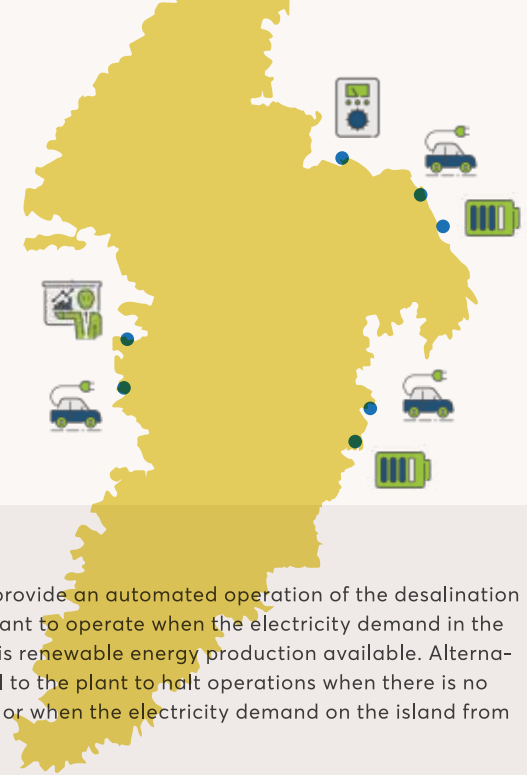
The electricity mix of Kythnos Island is dominated by diesel and fuel oil.

- The local power station was constructed by Public Power Corporation S.A. in 1964.
- The thermal installed capacity is 4.966 MW, with a peak load of 2.7 MW
- There are 3 medium voltage distribution lines at 15 kV
- There is no transmission network

Timeline



What exactly will be tested in Kythnos?



WiseCORP

In Kythnos WiseCORP will provide an automated operation of the desalination plant. It will signal to the plant to operate when the electricity demand in the island is low or when there is renewable energy production available. Alternatively, WiseCORP will signal to the plant to halt operations when there is no more wind power available or when the electricity demand on the island from other electric loads rises.



WG STaaS/VPP

Battery storage systems with Li-Ion technology will be installed at municipal buildings in Kythnos such as the Town Hall in order to increase the use of the island's renewable energy resources and to reduce their curtailment. These battery systems, when combined with a local energy source, can increase self-consumption of the buildings and cut expenses from the electric bill.



WG Cockpit

With WG Cockpit, the operation and dispatch of the thermal station and the renewable energy plants in Kythnos will be automated to match the demand according to availability, load and weather forecasting data. Priority will be given to renewable energy generation and curtailment. Moreover, WG Cockpit will increase the safety and reliability of Kythnos's grid.



WiseEVP

EV charging stations will be installed at public spaces in Kythnos and electric vehicles will be deployed in the island to be used by employees of the municipality for duty purposes and by tourists for transportation between the settlements. WiseEVP will optimize the charging and discharging of the EVs to increase renewable energy use in the island and to reduce energy billing.

