



Easy
Smart
Grid GmbH



**Cleaner and cheaper electricity
for Islands and Isolated Grids**



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Easy Smart Grid (ESG) develops the most efficient solution for grid stability, sustainable integration of renewable energies (RE) and E-mobility for island grids.

Challenges and opportunities

Isolated system operators rely on themselves and robust technology to serve their customers. Fortunately, transformation to renewable energy for many reasons is very attractive for islands:

○ RE means lower cost and fewer emissions

Island electricity systems are based on diesel or heavy fuel oil, leading to high cost and emissions. In combination with most islands' rich RE potential (wind, solar), faster de-carbonization means higher savings.

○ Local added value replaces import dependence

Spending more on RE installations and less on fuel imports increases local added value and jobs, raises living standards and energy independence.

○ Stable and resilient electricity supply

Minor impacts disturb fragile island grid balance, limiting the use of volatile renewable sources (sun, wind). Isolated grids are not supported by neighbours, so voltage dips and frequency drops cause more recovery actions or even blackouts. Our solution mobilizes local load flexibility for improved grid stability and resilience.

Use valuable existing opportunities on Islands, such as:

— Heating and Cooling

The provision of heat (hot water in households, steam in restaurant kitchens) and cold (in fridges and freezers, for buildings, or cold storage for agricultural produce, fresh fish or food) consumes a lot of electric energy. Because it is very cheap to store heat or cold with higher thermal mass and better insulation, flexible operation of heat pumps, electric heaters and cooling compressors can provide large and low cost energy storage.

Desalination and water supply

Climate and geography often necessitate energy-hungry water pumping and desalination. Both can be used for inexpensive energy storage by Demand Side Management, if a simple water tank or reservoir decouples water from electricity consumption and enables a “virtual battery”.

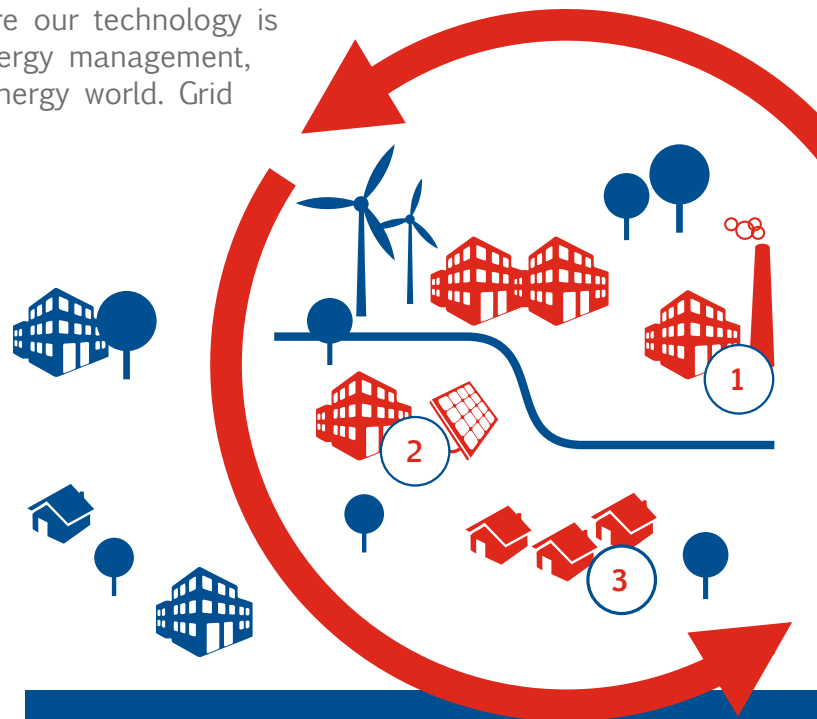
E-mobility on islands

Islands are a great spot for ambitious E-car players. Battery range is not a limit at given road distances, and managed charging offers substantial flexibility potential. “Green” transport helps reduce emissions, pollutants and noise. Such environmental action increases island’s attractiveness for tourists, which are keen to try new things (such as E-cars) during their vacations.

Migrating to the Future

Climate friendly renewables based energy systems can be implemented if consumption adapts to generation, enabled by dynamic tariffs. Our solution allows to implement fully decentral management and local energy markets (LEMs). While dynamic electricity tariffs are part of the new European market design, they are not yet implemented in most electric grids. Therefore our technology is compatible with both existing and future energy management, so allows smooth migration to the digital energy world. Grid operators working with us can:

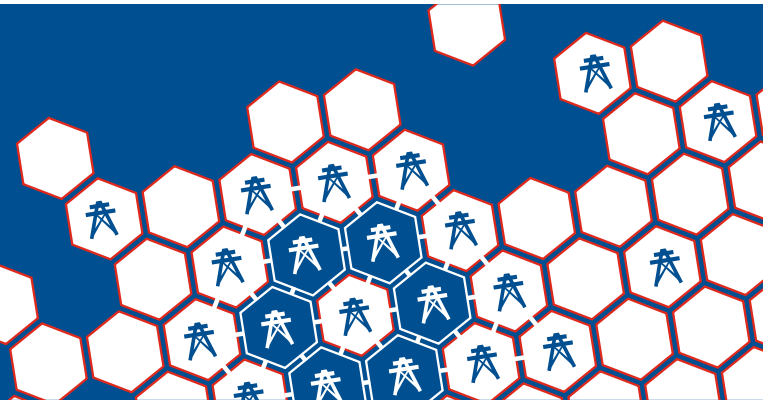
- 1.** Use own flexibility first, from cooling of computer centres and offices to charging their fleet of E-cars. Some also act as water utilities with high pumping loads that can be shifted. They can implement our solution without external contracts and use own flexibility for first effects and learning.
- 2.** Then some large customers are involved with dynamic tariffs that benefit both parties: Customers save on energy cost, and the utility benefits from the “virtual batteries” they obtain. Agreements are simple to develop and only few regulatory adaptations are needed.
- 3.** Finally, dynamic tariffs are offered to more customers who directly benefit from the savings they help to generate.



This enables a migration based on continuous improvement: As more flexibility becomes available, more renewable energy can be used. Generation cost and green-house gas emissions drop, while implementation risk and investments remain low.

Islands connected to mainland

Islands (planned to be) connected to mainland also benefit by adapting local consumption through load shifting: The cable can be dimensioned smaller (for average instead of peak load), and islanded operation is easier in case of accidental cable cuts.



Island energy technology may help other grids

Similar conditions than on islands apply in municipalities or geographically isolated areas on mainland. A smart island management solution can also manage such an energy cell within a larger “honeycomb” type cellular grid: Cellular grids will support higher RE integration, increase resilience and reduce cost.



Easy Smart Grid

was founded in Karlsruhe/Germany in 2014 with a clear vision: An energy system dominated by renewable sources. Our mission is to supply the missing puzzle piece - a real time energy management technology with unmatched price/performance ratio to make the energy transformation simple and affordable.

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