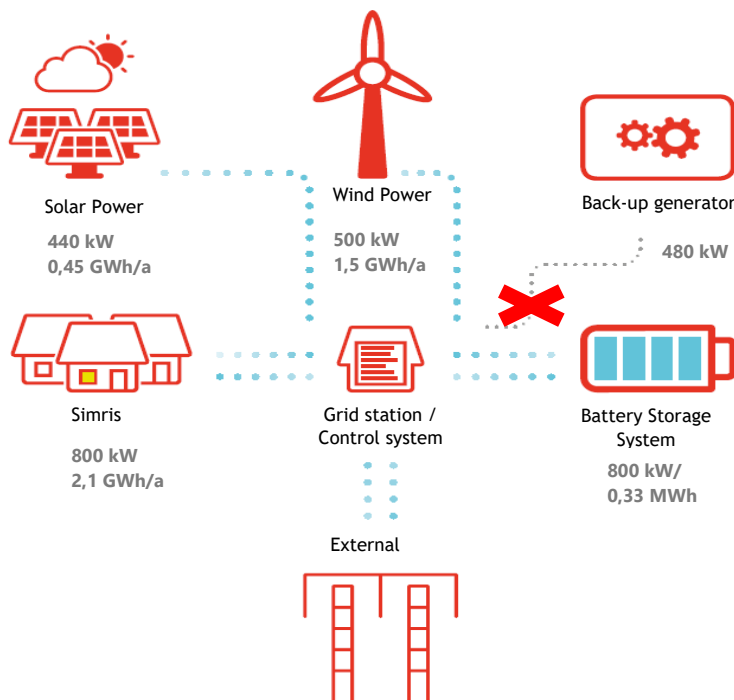# VIRTUAL ISLAND MODE OPERATION – LOCAL ENERGY SYSTEM IN SIMRIS

Since a few weeks back, E.ON entered a new stage with the introduction of a Virtual Island Mode (VIM) to the Local Energy System in Simris. In VIM, the only objective is to minimize power exchanges with the utility grid. This objective translates into a cost function, which penalizes the absolute value of the power flow from and to the utility grid respectively. Particularly, power is only provided to the utility grid if renewables would have to be curtailed otherwise and power is consumed from the utility grid if internal generation and storage cannot satisfy the demand.

VIM is currently being used during the four out of five weeks when not in test mode. During these periods the battery is running as during a regular test week. However, when the battery storage system reaches its maximum state of charge level, curtailment of the centralized production units, i.e. Solar- and Wind Power Plant, is not initialized as during island mode operation. Instead, the excess energy is distributed to the external power grid. If the lower state of charge level of the battery is reached, power will be provided by the external power grid instead of utilizing the back-up biodiesel generator, as would be the case during test weeks.



Solar Power
**440 kW**
**0,45 GWh/a**

Wind Power
**500 kW**
**1,5 GWh/a**

Back-up generator

**480 kW**

Simris
**800 kW**
**2,1 GWh/a**

Grid station / Control system

Battery Storage System
**800 kW/ 0,33 MWh**

External

*Virtual Island Mode operation:*

*External grid is utilized when needed and back-up generator and curtailment of Solar- and Wind power plant is avoided.*

Through implementing VIM more data regarding the Demand Side Response system can be collected as data is gathered every week instead of every fifth week. This additional data will enable fine-tuning of the Demand Side Response system, thus hopefully increasing the systems overall efficiency and stability. In addition, as VIM allows for DSR operation it will increase the autarky level of the customers.