

## Newsletter #9 - April 2019

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# EDITORIAL

## New market designs and the role of the aggregators



*"The actors of the electrical system need to place the consumer at the center of their attention"*

**T**he European Union aims to reach 32% of renewable energy in its energy mix by 2030. This implies a massive development of renewable energies and electric vehicles that will largely be decentralized and connected to the distribution network.

InterFlex explores how a local flexibility management mechanism can facilitate this transition. The value of flexibility for local needs depends on the ability of network operators to mobilize this flexibility to meet their needs but also on the willingness of consumers and producers to participate. The challenge is to involve them via enticing offers guaranteeing their comfort, a mastery of their bill, while also contributing to sustainable development.

The role of the aggregator is fundamental here to build and manage a local portfolio of flexibilities through packaged offers combining technical solutions, energy efficiency services and flexibility remuneration.

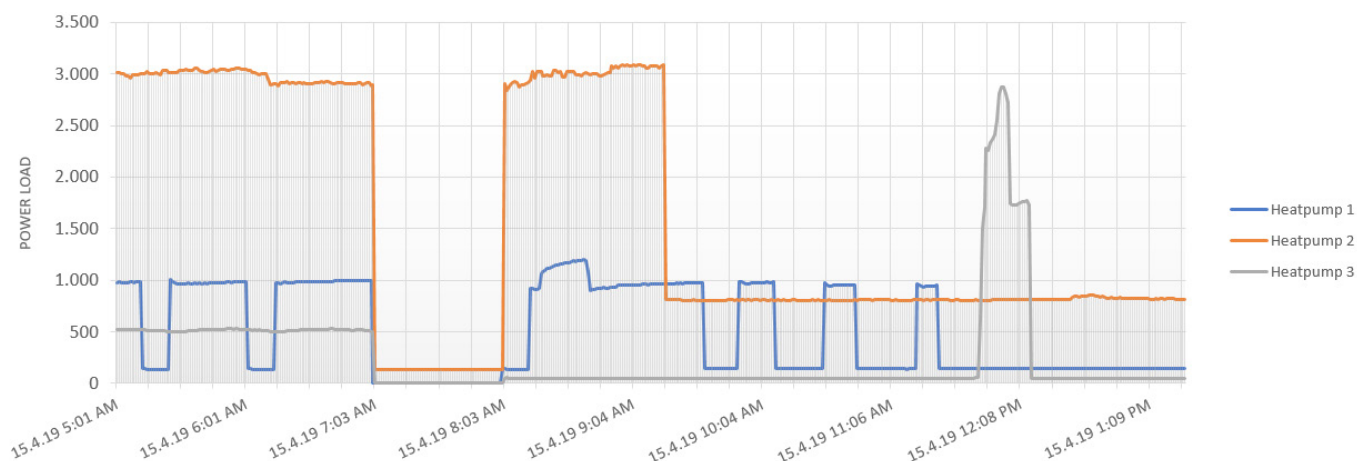
The real-life demonstrations carried out within InterFlex and in particular in the French demonstrator Nice Smart Valley made it possible to apprehend this commercial dimension. More than ever, the actors of the electrical system need to place the consumer at the center of their attention by both understanding and then meeting their true interests.

The energy transition will be with and for consumers, or it will not happen. ●

**Cécile Cordier**  
Engie, Head of Prospective Energy  
Management Services

# GERMAN DEMO SUCCESSFULLY CONTROLS DOMESTIC HEATER BY USING THE NEWLY DEVELOPED SMART GRID HUB

**DSO Avacon managed to control residential heaters through its IT platform Smart Grid Hub (SGH) that was developed during earlier phases of the German Interflex Demonstrator.**



With this facility, the gateways and a certification-DSO can finally tap ready control unit. After the signal is marked in red. The devices in this demonstration are heatpumps that can be interrupted for short periods by the DSO under the current regulation. Avacon demonstrates here a one-hour reduction of power consumption to avoid peak-load situations. The graph shows the successful switching as well as a rebounding effect when heatpumps catch up the delayed consumption. ●

reserves offered by integration into the SGH, the domestic heaters, such as heat pumps and storage heaters. It allows the system operator to balance the network, optimize system operation and increase the hosting capacity for locally generated green energy.

The SGH is fully integrated with the DSO's grid control SCADA on one side, and the national smart meter framework (SMFW) on the other. Avacon recently successfully migrated the SGH and its first pilot customers on the smart meter framework. The recent milestone included project customers that use night storage heaters or heatpumps for central heating.

These load management functions aim to synchronize consumption and supply for forecasted times of high renewable infeed into the grid. It also allows to improve the DSO-operation in general.

Since the beginning of 2019, these households were equipped with a certified smart meter. It's the first nationwide certified smart meter

The charts above illustrate the load curve for a sample of three heaters that were triggered to reduce consumption for one



# INITIAL ANALYSIS OF THE INTERFLEX<sup>®</sup> DUTCH DEMO

**The Dutch demonstration of Interflex Project is implemented in Strijp-S, Eindhoven. In this demonstration, two MV/LV transformers are considered as real congestion points in the grid.**

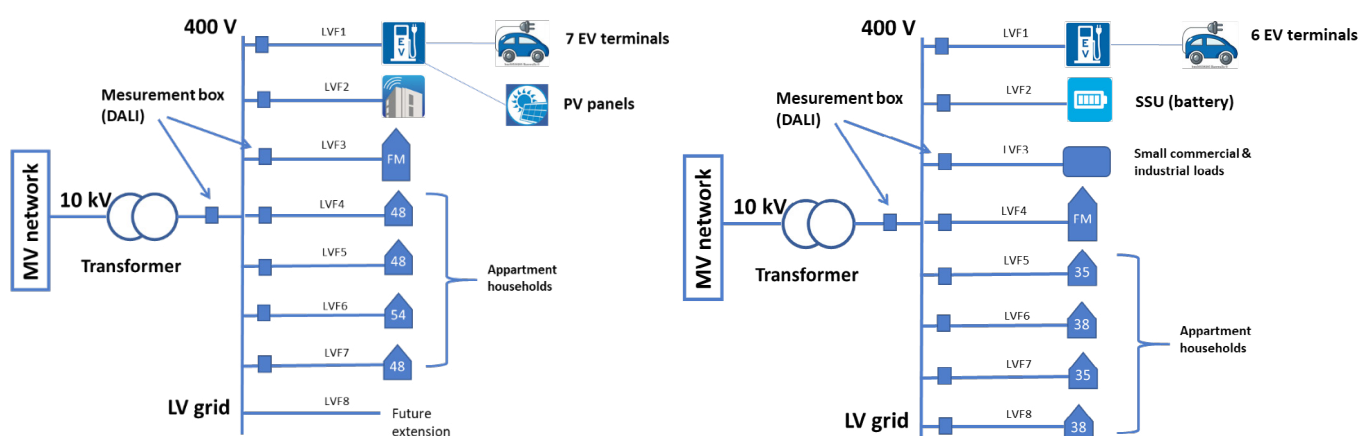
The Grid Management and consequently will receive On the other congestion point (PV+EV), as already expected, higher uncertainty and unpredictability of Flex resources lead to less availability and limited Flex Offer.

The System(GMS)isdeveloped the Flex Offer. These messages include the magnitude of required and available flexibility per PTU (every 15 min) for the whole next day (96 PTUs).

The structure of GMS and its communication with aggregators were elaborated in the previous newsletter. In this article, the details of the Dutch Demo and the initial results of the analysis will be discussed.

Fig. 2 and Fig. 3 illustrate the initial analysis of average sent and received Flex per congestion point over the month of March. As you can observe, these two figures provide an explicit

Fig. 4 shows a daily comparison between Energy Request and Energy Offer during the month of March. According to this analysis, SSU can be a more reliable source of flexibility than EV and



**Fig 1. Congestion points topology and specifications**

specification of the connected overview of the requested Flex PV; however, it may not be the loads to the congestion on each congestion point and a most cost effective option. points. As you can observe, clear comparison with the offered the pilot consists of two MV/ Flex, respectively. The different LV transformers including EV, potential of each flexibility source is still under experiment and the PV and Smart Storage Unit (production/consumption) such aggregators are still exploring the (battery) as flexible loads. Two as PV, EV and SSU can be deduced optimum model for responding aggregators are connected to from the Flex Offer pattern. The to Flex Requests. Therefore, it each congestion point in order to initial analysis demonstrates that is too early to draw any certain control and operate the flexibility Flex Offer does not comply with conclusion. We are still evaluating sources. One congestion point Flex Request. On congestion the availability and quality of the comprises of EV and PV, and point (SSU+EV), the PTUs with required data such as forecast highest amount of Flex Request values or assigned prices. This contains EV and SSU. In case of receive the lowest amount of pilot project provides us with a day-ahead congestion, GMS will Flex Offer. This is an interesting great insight of the whole Flex send the Flex Request to each insight which can be caused by market and process. As a result of aggregator connected to the either economical or technical this valuable insight, the process corresponding congestion point restrictions. will be improving in the future. ●

Flex Request Vs. Flex offer: Average per PTU over Period of 2019-03-01 to 2019-03-31

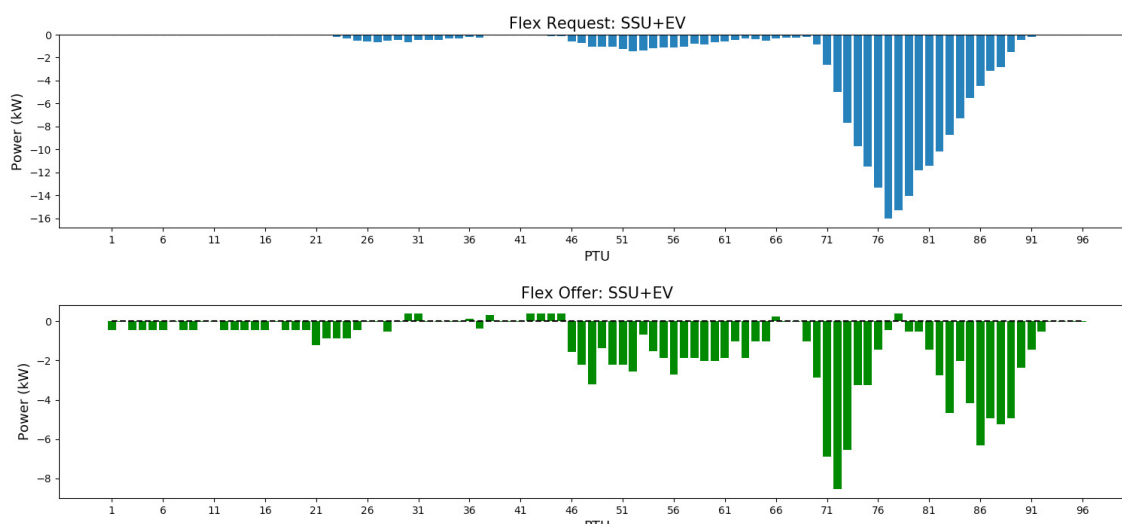


Fig 2. Flex request vs. flex offer: average per PTU over March for congestion point SSU+EV

Flex Request Vs. Flex offer: Average per PTU over Period of 2019-03-01 to 2019-03-31

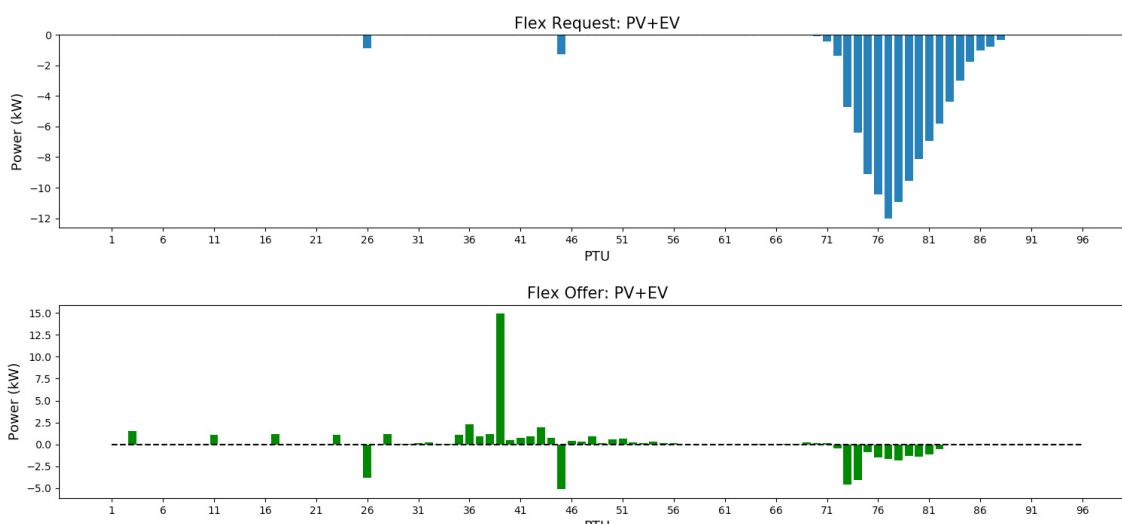


Fig 3. Flex request vs. flex offer: average per PTU over March for congestion point PV+EV

Comparing Energy Request Vs. Energy Offer per Day: 2019-03-01 to 2019-03-31

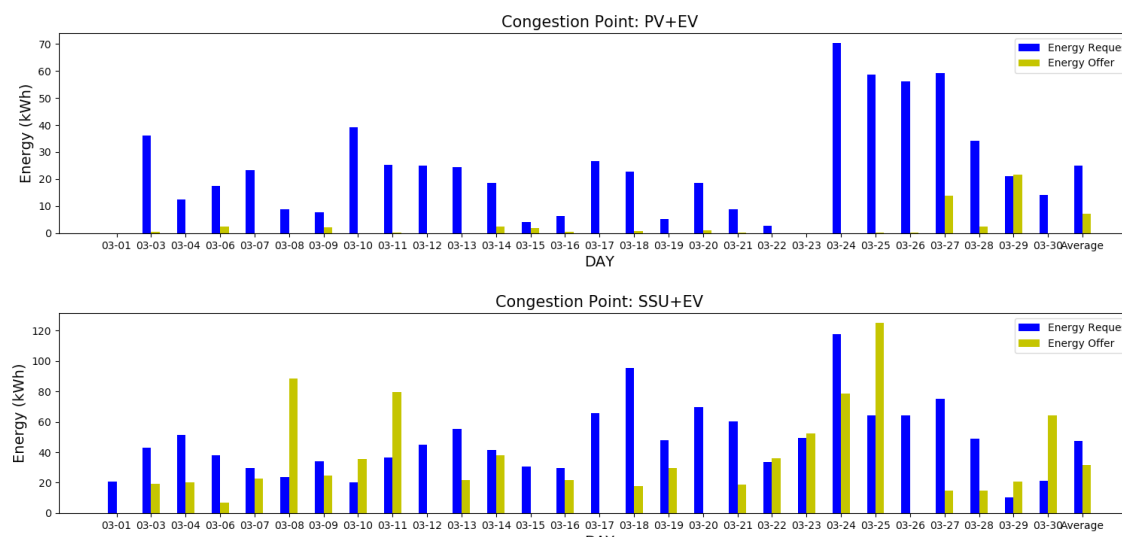


Fig 4. Comparing energy request vs. energy offer per day over March 2019

# FIRST SUCCESSFUL ISLANDING TESTS ON LERINS ISLANDS FOR THE FRENCH DEMO

**A**fter several months of laboratory trials and field deployment, Socomec and Enedis have successfully run the first islanding experiment on the Lérins islands on March 13th. For the first time, the distributor's storage system stabilized the whole MV network of both Ste Marguerite and St Honorat islands, independently from the main distribution grid.

remote control of the system, as well as seamless islanding operation i.e. the switch from the main to the island grid without any interruption of electricity supply for customers- has been deployed. A second storage system, owned by Engie is ready to be deployed in May. It will act as a Grid Supporting Unit to sustain the before mentioned DSO Grid Forming Unit.



Enedis' storage system, acting as a Grid Forming Unit, performs the voltage control and balancing during the islanding operation, thanks to Socomec solutions, under the same safety conditions as on the main distribution grid.

A lot of exciting demonstrations are to come within the next weeks, opening up on new technical and business solutions to ensure a safe and carbon-free backup solution for islands. ●

After this first successful test, all the equipment ensuring the

[Visit the Nice Smart Valley website to follow the ongoing demonstrations.](#)

## TECHNICAL COMMITTEE MEETING #13 - SWEDEN



**D**uring the 13th Interflex Technical Committee meeting on March 27th in Sweden, the InterFlex consortium visited the islanding demonstration in the village of Simris, located in the south of the country.

E.ON Energidistribution presented the assets that allow Simris' grid to run on an islanding mode:

- The Energy Management System (EMS) allows for a remote control of the microgrid and enables a seamless transition between grid-connected and islanding mode.
- Central assets (PV-panels, wind turbine, lithium-ion battery and

a back-up generator) provide the village with 100% renewable energy during islanding mode/test weeks. The central lithium ion-battery manages the balance gap between the production and consumption of the microgrid, in addition to assuring that the power quality is maintained in the system.

- Residential steerable devices, such as Power to Heat and Power to Power assets, are also used to provide further flexibility to the local energy system in Simris. For that purpose, new heat pumps and new solar cells with befittingly household batteries were offered to the customers. Existing hot tap water boilers and heat pumps were also retrofitted. ●



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Any question? Send us an email at  
[interflex@inteflex-h2020.com](mailto:interflex@inteflex-h2020.com)

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**InterFlex 3rd Community Meeting**  
**May 23rd 2019, 2.00 – 3.00 pm CET**

**Webinar on Market design recommendations  
for a local flexibility market**

**[REGISTER HERE](#)**

Editor: Youssef Roudaby, Enedis



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