INITIAL ANALYSIS OF THE INTERFLEX' 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 System (GMS) is developed in the IT platform of Enexis in order to address the day-ahead congestion problem. 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. 1 shows the topology and specification of the connected loads to the congestion points. As you can observe, the pilot consists of two MV/LV transformers including EV, PV and Smart Storage Unit (battery) as flexible loads. Two aggregators are connected to each congestion point in order to control and operate the flexibility sources. One congestion point comprises of EV and PV, and the other congestion point contains EV and SSU. In case of day-ahead congestion, GMS will send the Flex Request to each aggregator connected to the corresponding congestion point and consequently will receive 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).

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 overview of the requested Flex on each congestion point and a clear comparison with the offered Flex, respectively. The different potential of each flexibility source (production/consumption) such as PV, EV and SSU can be deduced from the Flex Offer pattern. The initial analysis demonstrates that Flex Offer does not comply with Flex Request. On congestion point (SSU+EV), the PTUs with highest amount of Flex Request receive the lowest amount of Flex Offer. This is an interesting insight which can be caused by either economical or technical restrictions.

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.

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 PV; however, it may not be the most cost effective option.

It is noticeable that the field test is still under experiment and the aggregators are still exploring the optimum model for responding to Flex Requests. Therefore, it is too early to draw any certain conclusion. We are still evaluating the availability and quality of the required data such as forecast values or assigned prices. This pilot project provides us with a great insight of the whole Flex market and process. As a result of this valuable insight, the process will be improving in the future.

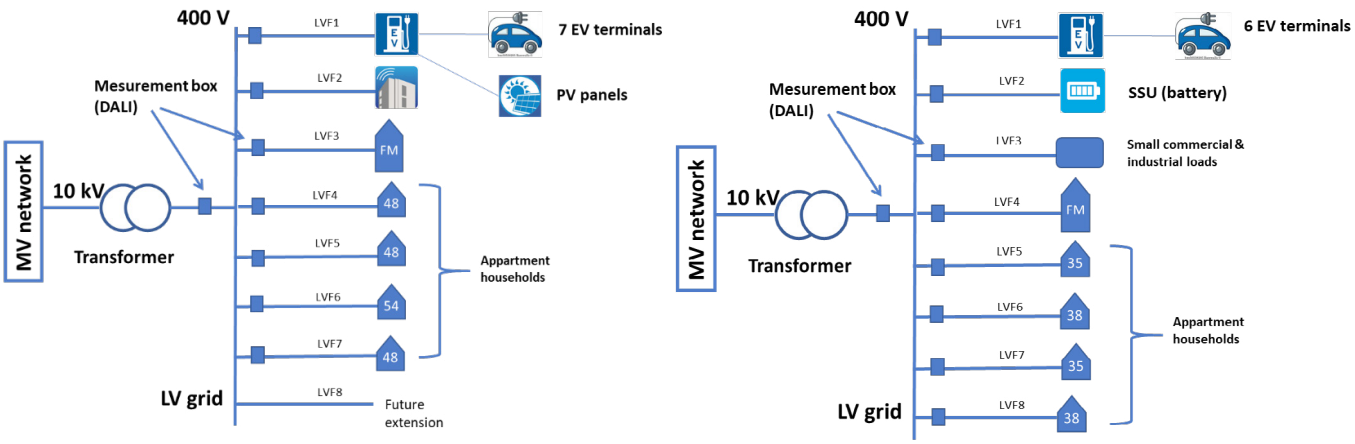

Fig 1. Congestion points topology and specifications

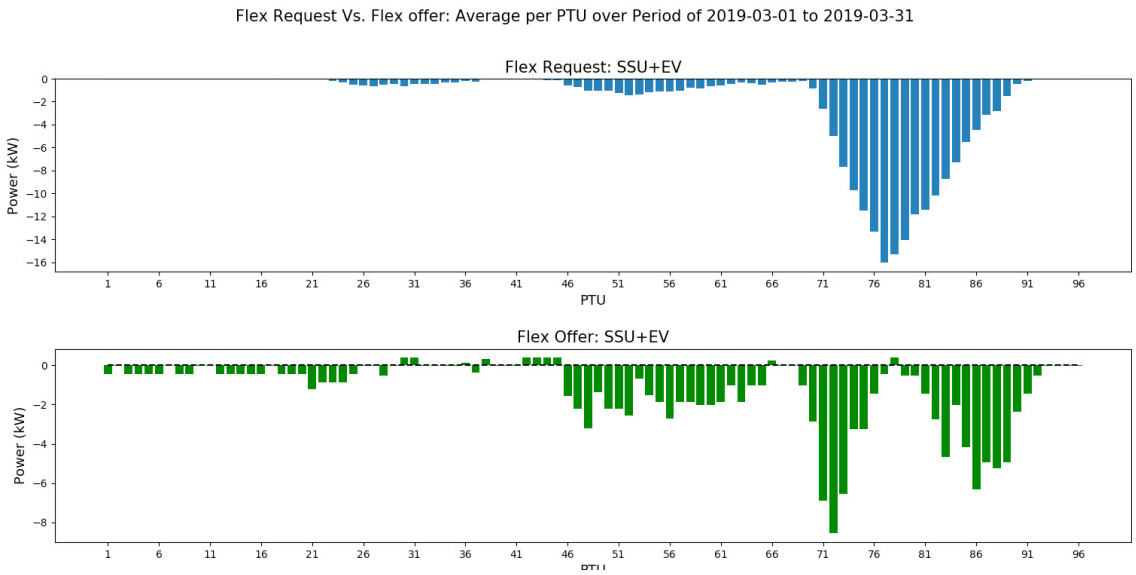

Fig 2. Flex request vs. flex offer: average per PTU over March for congestion point SSU+EV

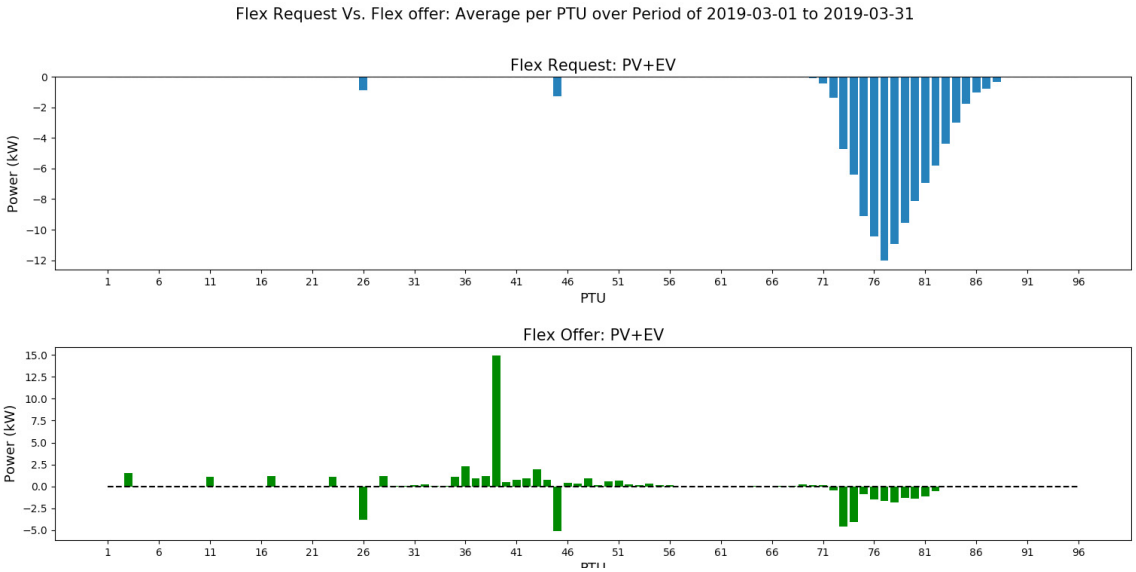

Fig 3. Flex request vs. flex offer: average per PTU over March for congestion point PV+EV

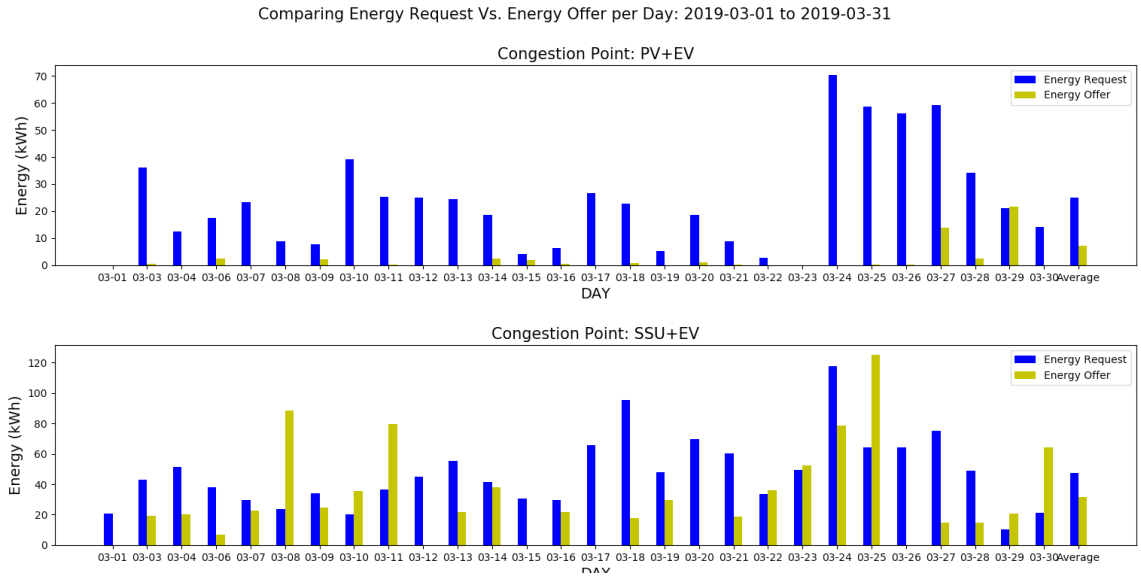

Fig 4. Comparing energy request vs. energy offer per day over March 2019