The use of a large-capacity battery storage system to smooth out consumption peaks and back up the operations of the Fenix Jeseník production plant

New findings 03/2019

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AERS
ADVANCED ENERGY STORAGE

Why?

- Very interesting results have been achieved at the OC Fenix administrative building, which is designed to be an active element of smart grids
- The building is constructed to the nZEB standard and fitted with a rooftop PV system with7.2 kwp, and a 26 kWh battery storage system

- One advantage of this solution which became apparent at OC Fenix is its high flexibility, and there are also options for its industrial application with significantly larger storage systems and a notably shorter return on investment
- For this reason the company AERS s.r.o. was founded in the autumn of 2016 to develop its own “in house” solution while gradually acquiring data from the operation of the OC Fenix building.

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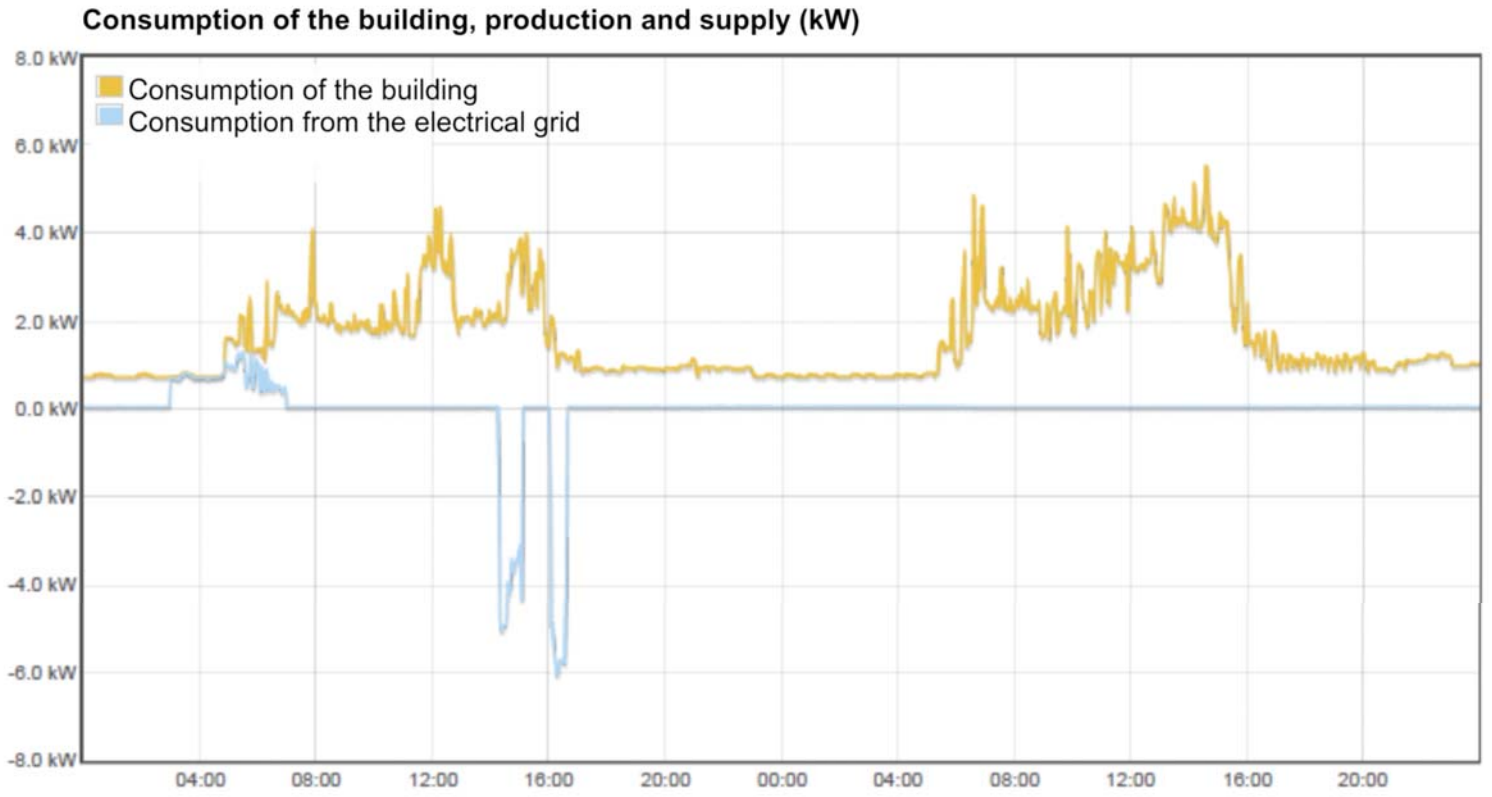

Detail 19.-20.6.2017

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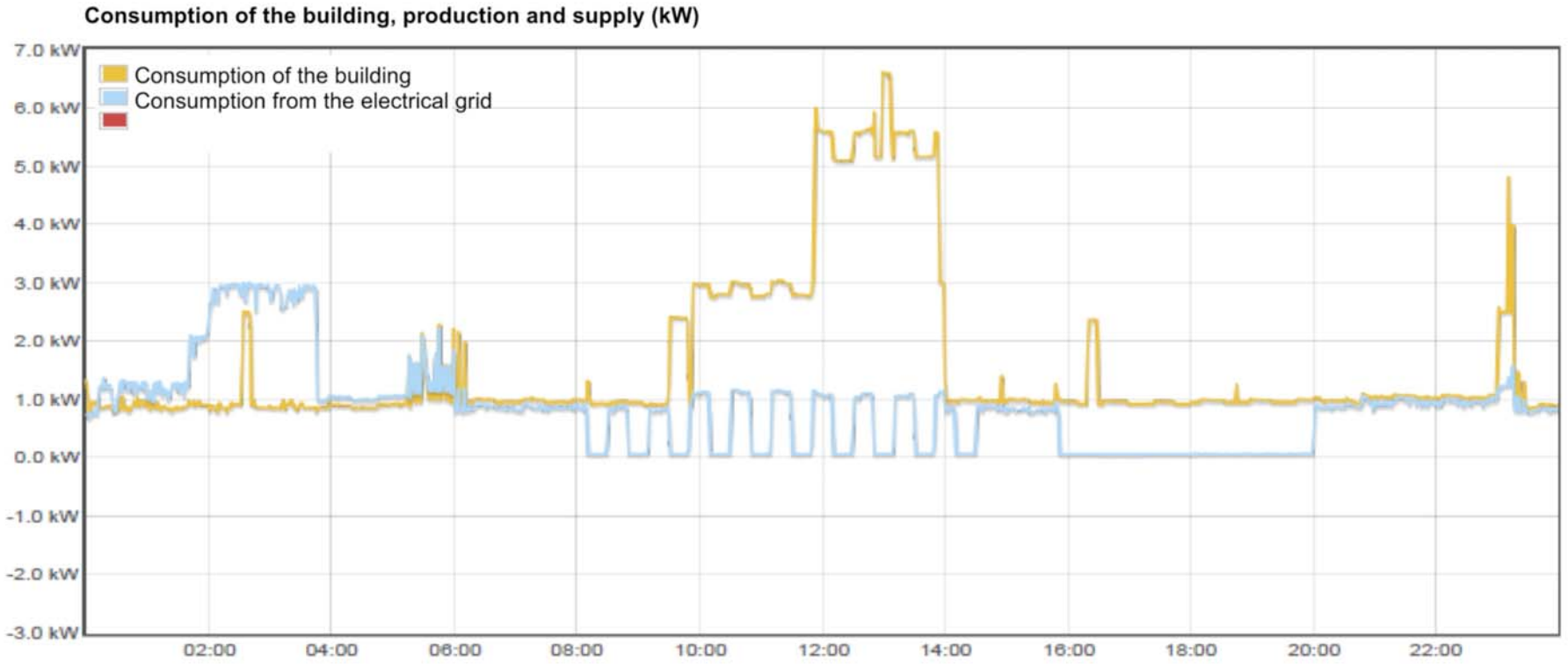
One of the loading tests performed in cooperation with ČEZ - distribution



Regular off-grid mode (30 min intervals) when load increases (up to 6kW)
The aim was not to exceed the 1 kW limit on energy consumption from the grid in the 6:00 – 22:00 period

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The SAS newly installed at the pilot site

The Fenix Jeseník production plant

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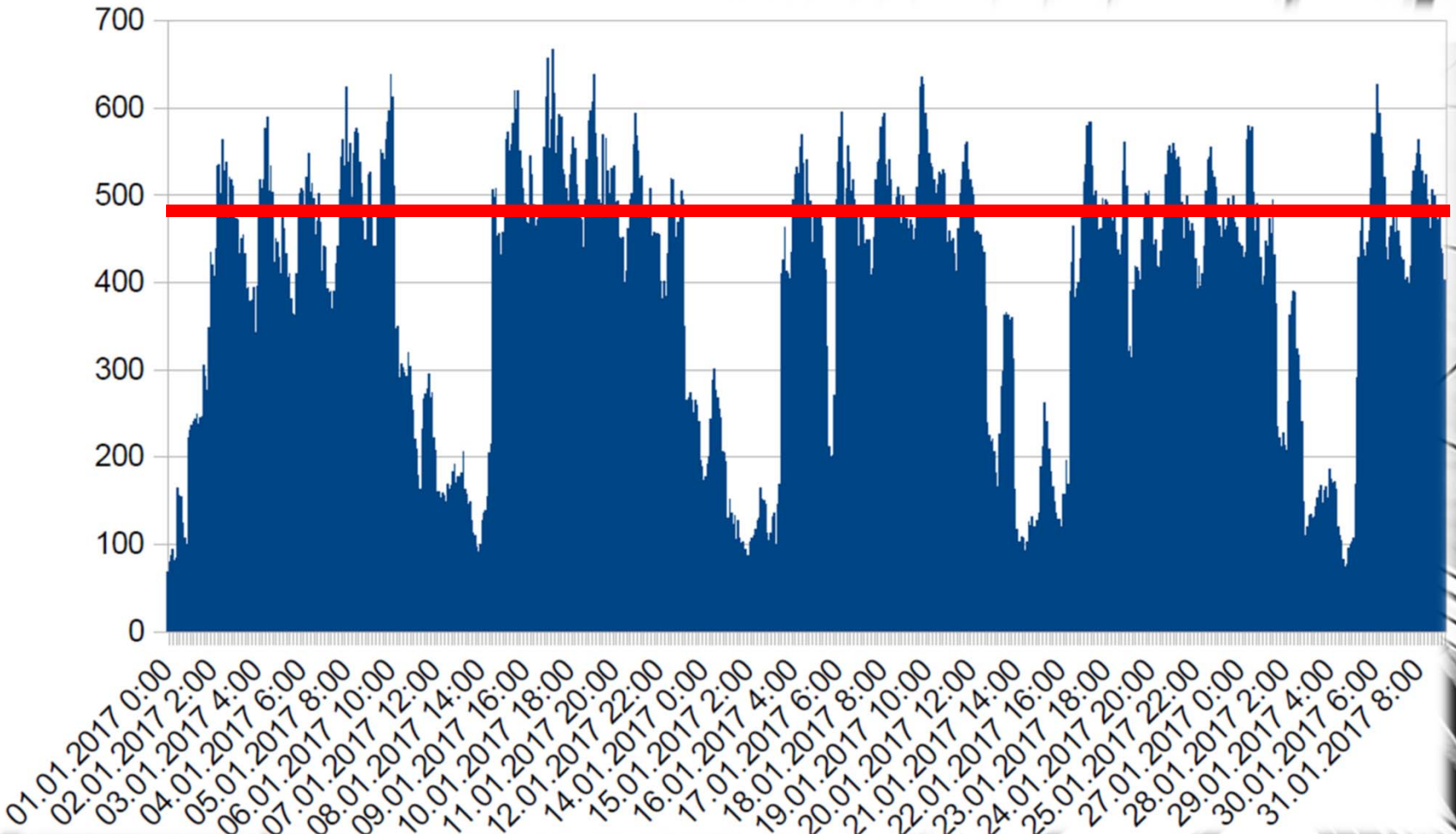
Overview of operations at the plant:

- Production of heating cable and heating mat systems
- Production of radiant heating panels
- Manufacturing technology - extruders and injection moulding machines
- Automated production using pressing and forming machines
- Electroplating and powder paint shops
- Parts of production processes have been robotized

The plan to install a large-capacity storage system

- Lowering of power held in reserve
- Compensates for energy consumption peaks (levels the diagram)
- Compensates for 1/4 hour maximums
- Operational energy backup for equipment downtime (POWER UPS)
- Compensates for minor outages and irregularities in energy supply that can cause sophisticated equipment to lose power and shut down, interrupting production, with all implied economic impacts
- Elimination of fines for exceeding maximums.

Planned consumption adjustment



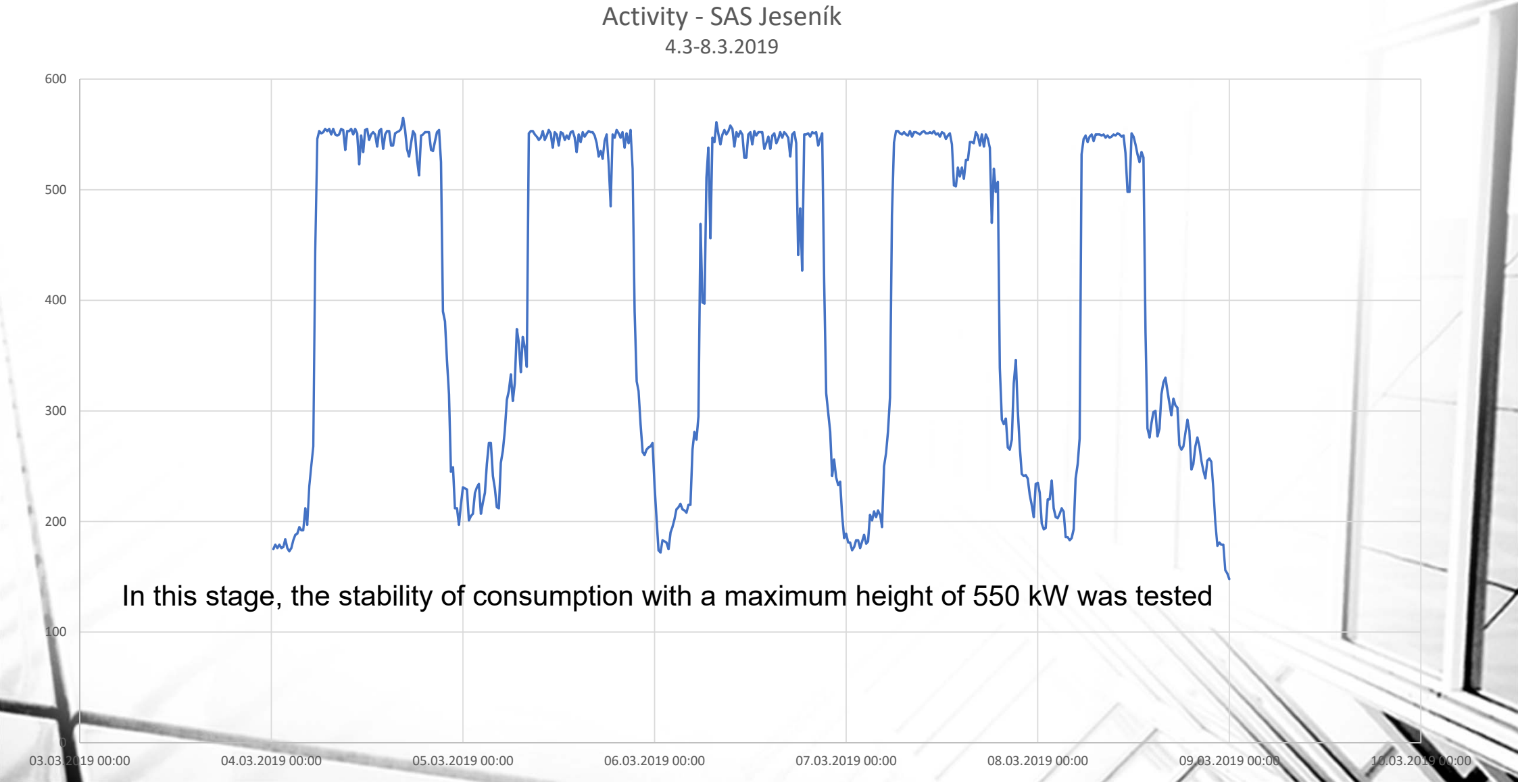
The peaking storage station (SAS)

A utility room in a former warehouse, Room No 1.09, was selected and reconstructed in order to house the SAS. This took place as part of the drive to increase the production capacity of the new manufacturing premises.
The utility room was adapted in order to accommodate the selected structural design of the SAS equipment.

The large-capacity storage system is constructed from 80x80x200cm distribution cabinets, which are divided into two blocks each with a capacity of 307kWh.

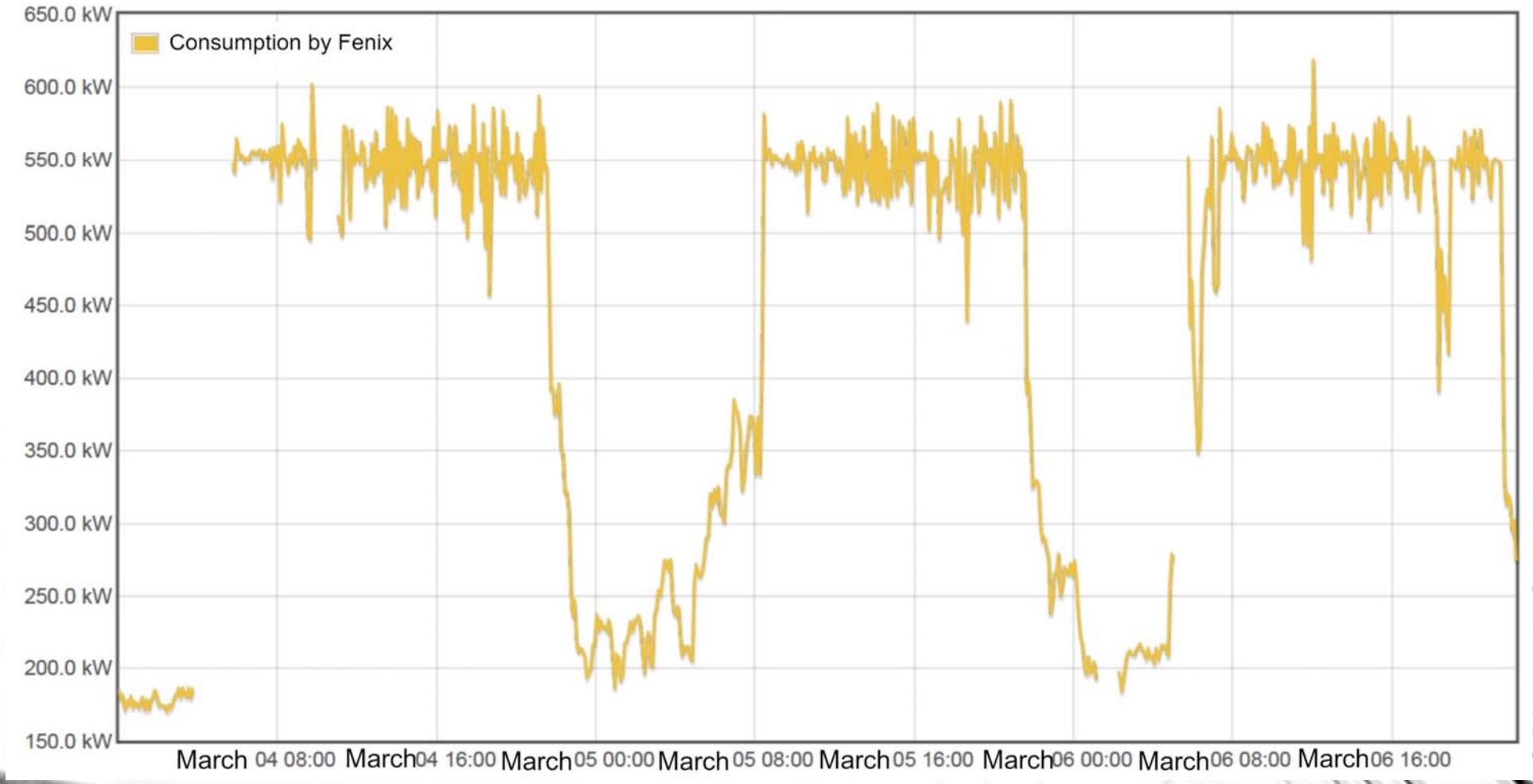
The premises have already been prepared for a potential additional expansion in the form of one more block.

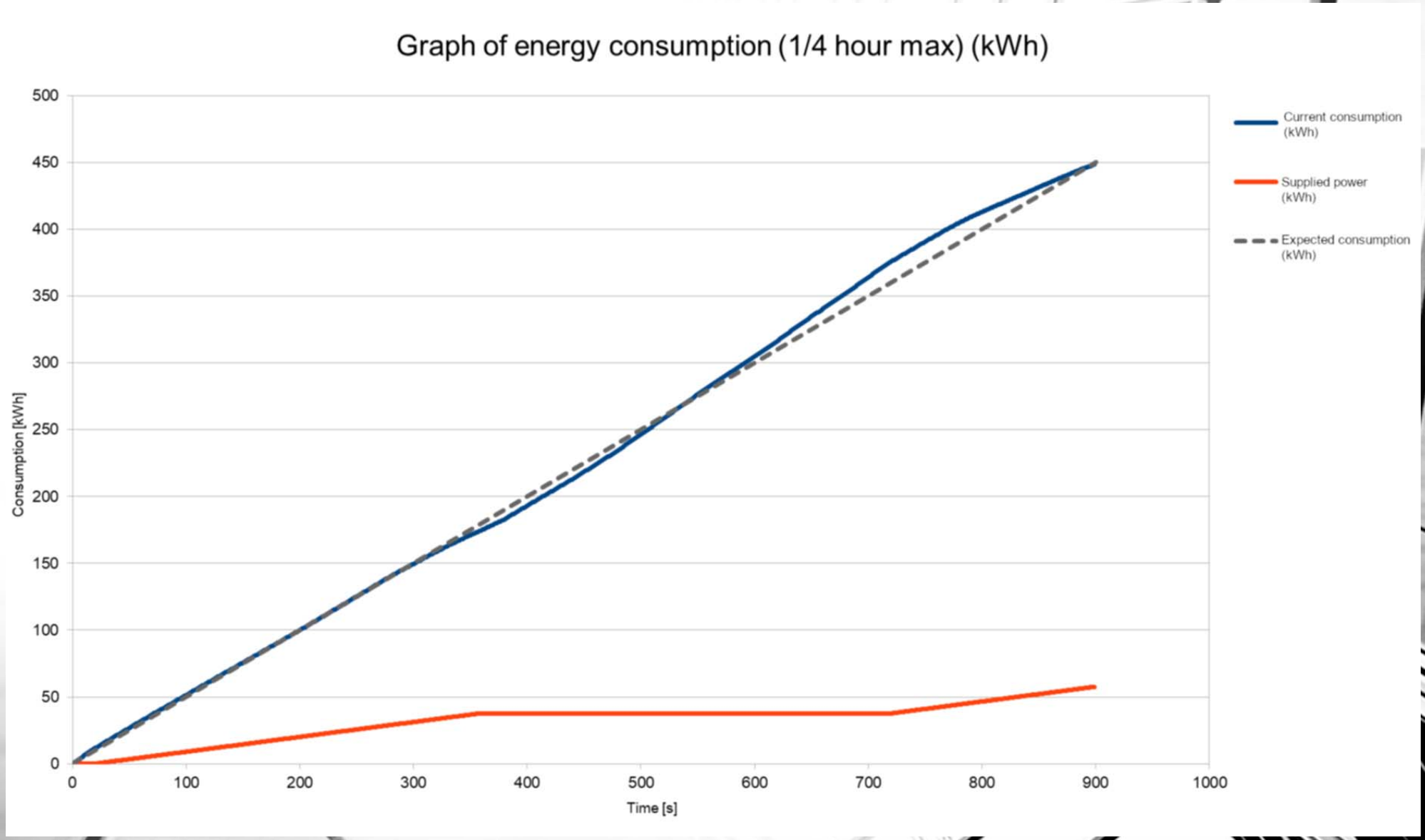
The first achieved results – ČEZ distribution monitoring



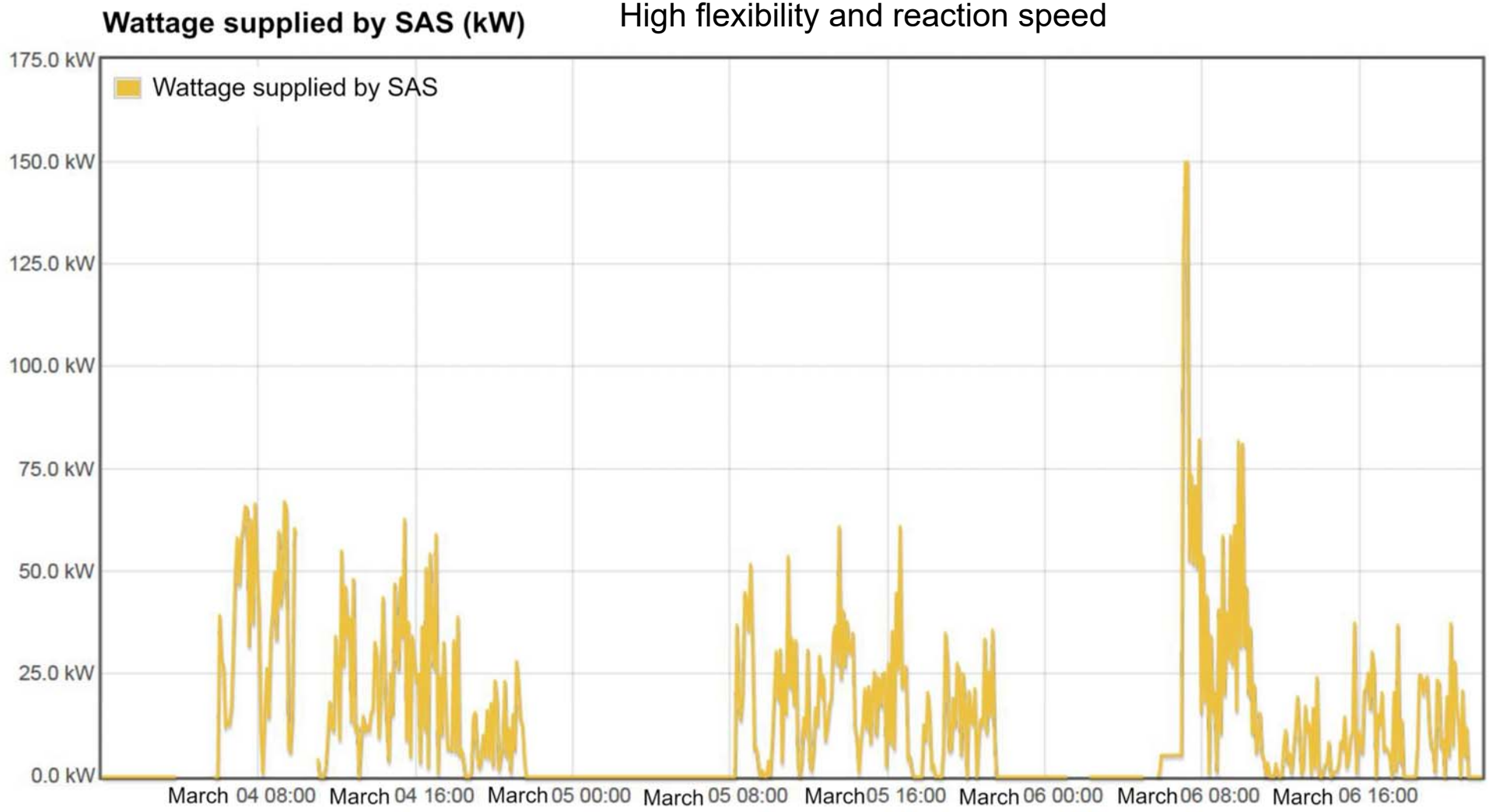
In this stage, the stability of consumption with a maximum height of 550 kW was tested

Consumption by Fenix (kW) The company’s own monitoring in minute-length steps

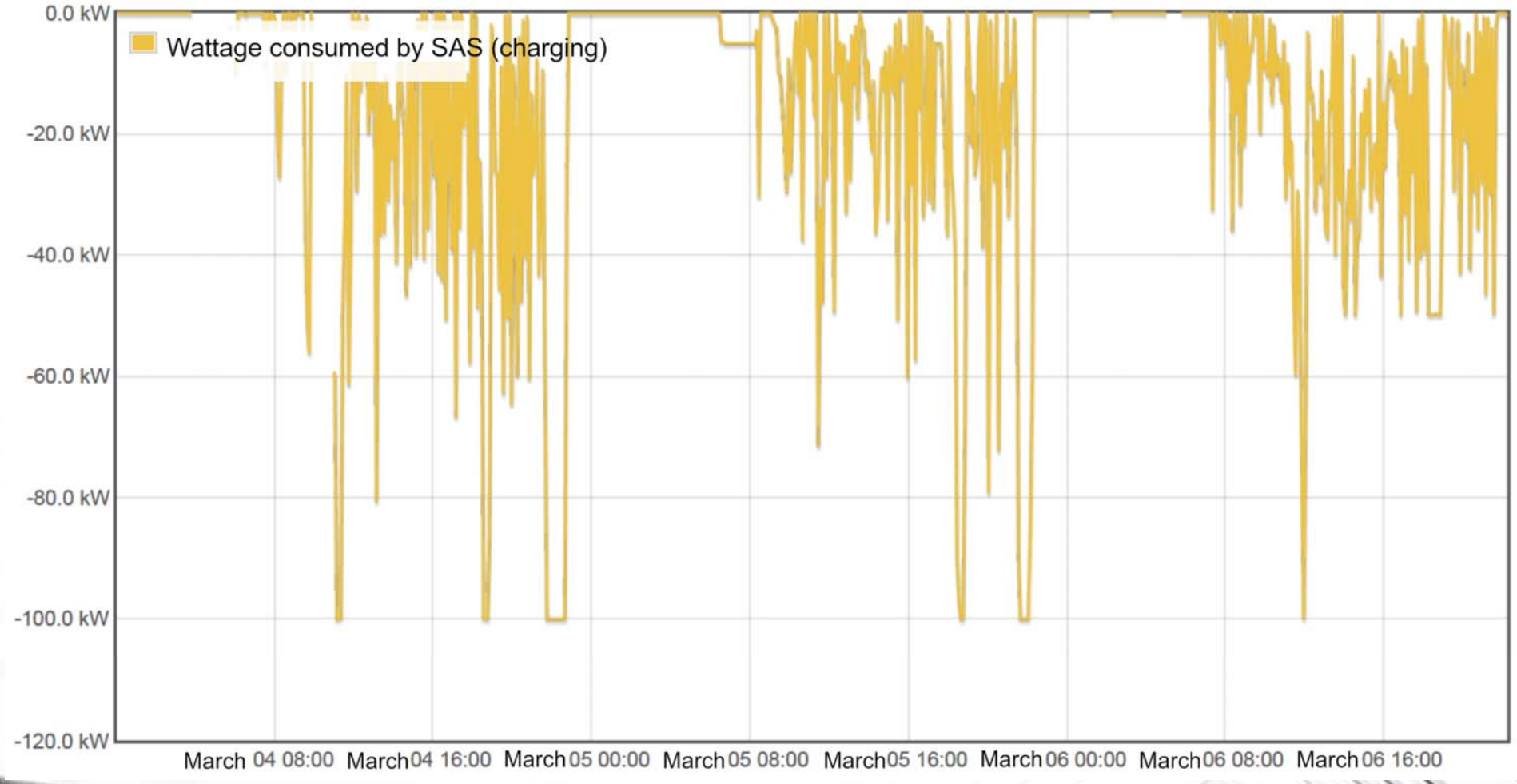



Graph of energy consumption (1/4 hour max) (kWh)
Consumption [kWh]
Time [s]
0
50
100
150
200
250
300
350
400
450
500
0
100
200
300
400
500
600
700
800
900
1000
Current consumption (kWh)
Supplied power (kWh)
Expected consumption (kWh)

High flexibility and reaction speed



Wattage consumed by SAS (charging) (kW) Use of short-term falls in consumption to charge the storage system



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Thank you for your attention

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