

# Solutions for increased self-consumptions and provision for SMEs

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## Synthesis

The energy landscape in Flanders has been marked in recent decades by the emergence of decentralized energy sources. The variable and less flexible nature of electricity from the sun and wind results in specific problems in the electricity grid. The search for good load balancing is essential for an optimal energy management for the SME.

Due to the unpredictable production of renewable energy, the grid is repeatedly forced to absorb or supply strong power peaks and self-sufficiency and consumption are falling. As a result, the profit from self-production from renewable energy is canceled out by the peak tax for which the SME is charged extra.

If industrial consumption is better coordinated locally via storage technologies, load shedding or shifting of own core activities, the SME will start maximizing the intended benefit from its energy bill through the increase in self-consumption and supply. Moreover, the distribution network is also relieved by the flattened energy demand. In addition to the obvious stakeholders in the field of renewable and decentralized energy sources, this research proposal is also important for producers and suppliers of storage media, such as batteries and UPS systems. In addition, new market segments are opened for energy suppliers and aggregators.

The starting point of the study is first the possibilities of "type consumers" and "type of decentralized sources" (such as PV, CHPs, emergency generators, UPS, ...) "and reserves / buffer capacity from the process activity (cooling, heat, compressed air) that occur in the SME. Subsequently, it is examined to what extent sliding loads over time (start-up time for machines, working hours) can have an impact on internal energy flows. Once the internal energy flows are known, the influences of the variable green energy input (sun, wind) on the installation can be estimated. As a result, demand and production peaks come into the picture and internal (load shifting) or external measures (battery systems) can be proposed to optimize self-consumption and the degree of self-determination.

- quantifying the available energy buffer capacity.
- Qualification of green energy sources with the objective of increasing self-consumption within the company.
- quantifying the intended improvement in self-sufficiency and self-consumption ratio