EnInnov2012 Abstract

Title: “Industrial / Commercial Demand Response as a Business Model – a practical view”

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1) Motivation:

The increasing share of renewable energy sources and their integration into the electricity networks creates great challenges for the stability and for the security of supply – as the grid has practically no storage capacity an increasing level of flexibility is required from future energy systems.

One proven approach to address these challenges is the application of Demand Response: a process to manage consumption (demand) of electricity in response to supply conditions. Demand Response has been a well-known term in the USA to prevent blackouts or brownouts. This basic concept needed to be developed further and to be adapted to European market realities. This provides for the intelligent use of electrical loads and decentralized generation capacity which can be marketed in aggregated form as flexibility products on the energy market. At the same time, the participating electricity consumers can play an active role in the development of the energy system and the integration of renewable energy.

2) Implementation approach:

Entelios has established a business model based on Demand Response and is the first Demand Response Aggregator and Service Provider in the German market and has since its inception taken also leading role in Europe. Entelios aggregates controllable electrical loads and decentralized generation capacity belonging to commercial, industrial and institutional energy users (Demand Response Participants). Networking is handled via the Entelios Network Operations Center (NOC). The Entelios NOC combines in-depth industry know-how with scalable processes and state of the art information and communication technology (ICT). Energy users are integrated by ICT and receive control signals. The power consumption of aggregated energy users is adjusted through the Entelios NOC based on the requirements of e.g. utilities, transmission and/or distribution system operators. Individual participating units (loads) are switched on or off depending on availability, fluctuations between power generation and demand are thereby balanced out. Hence, demand for power is made more flexible.

The Demand Response Participants receive a bonus from the commercialization of the aggregated flexibility („Megawatt under Management“ MWuM), at no additional costs or risks to their business. Commercialization is done through Entelios, using the German market for balancing energy as a first step. Further channels for MWuM commercialization are accessible e.g. in collaboration with utilities.

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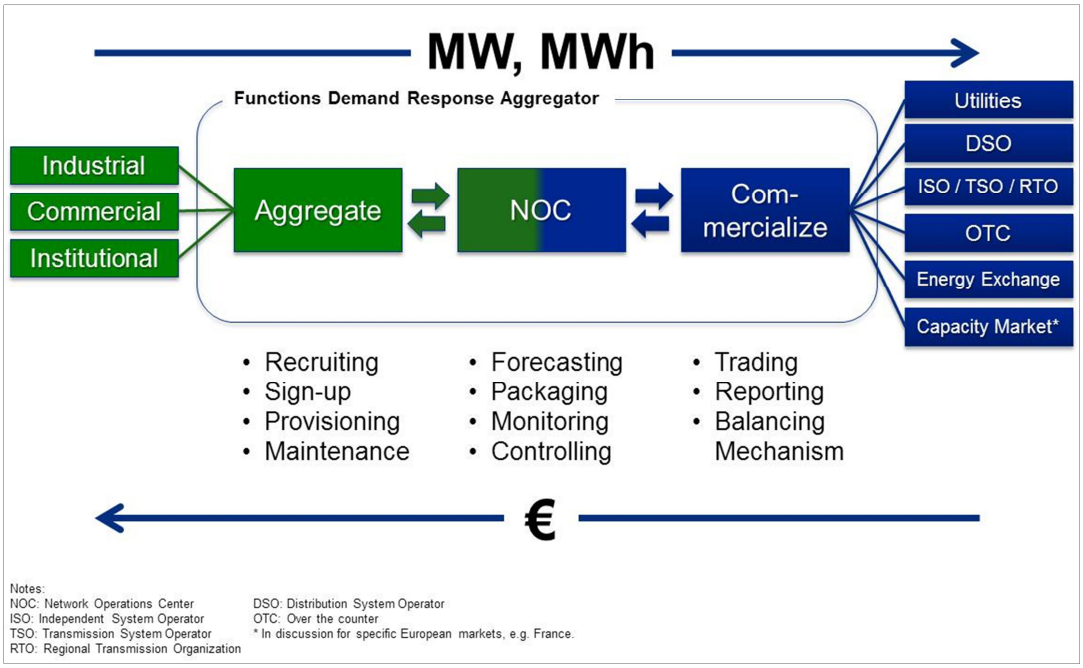

Graphic: Functions of a Demand Response Aggregator (Source & copyright: Entelios AG)

3) Results:

Since its foundation in 2010, Entelios has built the capability for addressing various types of electrical loads (e.g. Cooling, Heating, Ventilation, Air Conditioning, Pumps, Mills, Smelters) in various industries that offer large potential for Demand Response (e.g. food processing industry, wood processing industry, pulp & paper industry, non-ferrous metals processing industry, cement & glas processing industry, chemical industry, etc.).

At the same time, Entelios has established a business model that is fully compliant to the regulations of the electricity energy market in Germany and most European countries. Entelios acts as an independent Demand Response Aggregator and in parallel as a Demand Response Service Provider to utilities (depending on the market).

In addition, for promoting the application of Demand Response across Europe, Entelios is one of the founding members of the Smart Energy Demand Coalition (SEDC: http://sedc-coalition.eu/).

For short-term energy flexibility, Demand Response has already proven to be more capital efficient, faster in implementation and more energy efficient compared to most conventional alternatives e.g. gas and/or coal operated peaking power plants or pump-storage.

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