Flexible IT-platform to Synchronize Energy Demands with Volatile Markets

by

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Abstract

Based on the goal of exiting nuclear and fossil energies within the electricity generation, the percentage of renewable energies in the energy mix rises. Due to renewable energies' dependence on natural resources like sun or wind this development leads to a volatile energy supply on the markets. To satisfy their customers' needs even with a volatile energy supply, especially companies of the manufacturing sector need to consider this development. Production processes need to be developed further to be more energy efficient and to be adaptable in their energy demand to volatile supply. This includes being operable on various power levels or with different kinds of energy such as electricity or gas. Energy-flexible production processes need to be supported by flexible IT solutions. While there are already solutions for demand-side-management on the company side as well as on the market side, there are no holistic solutions yet, allowing for integration regardless of company or market boundaries. Therefore, this paper presents the concept of a service-oriented architecture for a flexible IT-platform to synchronize energy demands with volatile markets. A holistic approach allows for integration of companies as well as energy markets and enables an automated and efficient exploitation of demand response potentials.

Keywords: Digital Manufacturing System; Energy efficiency; Flexibility