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Efficiency and Energy Transition

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Abstract

In light of the Paris Agreement and the urgency to address climate change the European electricity industry has committed itself (Dec. 2017) to play a key role within the energy transition. The vision is to become carbon-neutral well before mid-century, taking into account the commercial availability of the transition technologies. This vision of the industry tops the European climate policy, which aims to reduce the CO₂-emissions in 2050 by 80% - 95%, compared to the level of 1990.

Provided the challenging vision will be realized, the total energy landscape will change. The importance of energy efficiency will decrease in favor of other targets such as economic efficiency and flexibility. The fossil-fuel fired power plants will disappear, unless they will be equipped with carbon capture technologies or biomass-fired. Fossil fuels will be replaced by renewables. The energy supply structure will change from centralized large power stations, to numerous decentralized smaller power plants. Electricity becomes the key energy carrier for the national economy.

On the way to a carbon-neutral Europe, fossil power plants will accompany the transition process as a partner of the renewables. During the transition process (or beyond?) they have the most important task to deliver grid services, especially backing the electricity within seconds at any time.

Besides the expansion of renewables, a further pillar of the energy transition is a significant increase in energy efficiency. The goal for the German economy is 50% reduction of primary energy by 2050, compared to 2008. The German Federal Ministry of Economic Affairs and Energy (BMWi) expects potential solutions for the power plant sector in the modernization of power stations and in the power-heat coupling. Besides the letters of intent and good will declarations a convincing, commercial technology is not in view, as nobody wants to pay for it. approx. 300 universal and non-universal institutes are supported by BMWi for developing new affordable technologies. Despite all these endeavors the power plant industry is more reacting on actual trends than setting the trend.

The session will describe some actual trends and how RWE reacts on them. As for example:

- high efficient industrial CHP (intelligent plant scheduling)
- IT system of boosting energy efficiency
- Peaker technology for grid services