
A brief introduction to the European research activities related to the uncertainty reduction in smart energy systems

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Abstract

As part of the overall EU renewable energy policy goals, the Netherlands is committed to produce 14% energy from renewable energy sources (RES) by 2020, and has the ambition to reach 16% in 2023. Most of the renewable energy will be produced small-scale, close to the consumers and fed directly into the distribution grid. Consequently, the management of the grid can no longer be based on the traditional top-down approach but will need a more bottom-up approach and a larger involvement of the regional (local) grid operators. To achieve the energy efficiency and sustainability goals of society, Smart Energy Systems (SES) with a multi-disciplinary nature via the merging and interaction of the electricity grid and ICT infrastructures are emerging. However, the development and operation of SES are facing challenges in both balancing energy supply and demand and securing the electricity networks (i.e. keeping them stable and reliable). In this report, several on-going SES related research projects in Europe, especial in the Netherlands, have been discussed to realize potential of distributed energy resources in offering energy/power flexibility to cope with such uncertain for the SES development.

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