**Applying Optimization Methods for  Demand Side Load Management in Distribution Networks with Photovoltaic Power Plants**
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Connecting the photovoltaic (PV) power plants to the distribution network further engages network that is already faced with a continuous increase in consumption, which ultimately requires additional investment in infrastructure. In order to avoid potentially costly investments in network, the concept of the smart grids are developed. In smart grid coordination and management of the different network elements increases the efficiency of the existing distribution network. One example of smart grid is management of certain loads in combination with PV power plants that are static. The goal of the project is to find a model for optimal management of loads with an aim to reduce peak demand in distribution network.