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Organisations

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Research outputs:

Optimal operation of integrated electrical, district heating and natural gas system in wind dominated power system
Nowadays, installed capacity of renewable energy sources is increasing at a high rate and even higher increase is expected in the future. In order to accommodate renewable energy sources, integration of gas, electricity and district heating network is a promising solution. This paper provides a coordinated operation and analysis of electricity, district heating and natural gas system with integrated wind farm. The interactions among different energy sectors will provide more flexibility required by the future renewable energy system. A nonlinear optimization problem is presented with focus on decreasing the operational cost and improving efficiency of integrated system, as well as meeting the demands. Optimal operation is performed for a test case system including constraints of individual systems and linkages between each of the systems. The test system includes electrical, district heating and natural gas subsystem with thermal and gas storages, combined heat and power and power to gas units and wind turbine. Simulation results show that integration of electricity, heating and natural gas system decreases the operational cost and provides higher flexibility to the system. Moreover, wind curtailment is reduced with integration of P2G.

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Projects:

Optimal operation and real time control of integrated energy systems
Turk, A., PhD Student, Department of Electrical Engineering
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Optimal Operation of Integrated Electricity and Heat Systems with Large Amounts of Wind and Solar Power
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15/10/2018 → 14/10/2021
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