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Study of Blockchain-Based Smart Contract Application for Peer-to-Peer Electricity Exchange in Distributed Trading Network

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In the perspective of requirements for future energy systems – decarbonisation, decentralization and digitalization, and increasing deployment of renewable energy sources, the transformation of energy distribution and trading mechanisms is inevitable. As the number of households are acquiring independent power generation capacities and becoming prosumers willing to sell excess energy, while energy consumers are looking for fair prices, the need for more flexible and cost-effective way to exchange energy is rising. Blockchain technology is designed to facilitate distributed transactions by removing the need for central management and utility-intermediaries, and as such is identified as potentially suitable platform for distributed energy market. While interested parties are investigating feasibility of using blockchain technology in energy sector, and number of pilots and research projects grows, details on realization are usually lacking. In our work, we are investigating smart contract application for peer-to-peer energy exchange in distributed blockchain-backed platform.