

Demonstration of Peer to Peer (P2P) Transaction of Surplus Energy Using BLOCKCHAIN Technology

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Keywords: *blockchain, P2Ptransaction, FIT, surplus energy, self-consumption*

Abstract

1. Background

The purchase period of FIT or Feed in Tariff for residential PV generation will begin to expire after November in 2019 in Japan. After FIT expiration, prosumers (consuming power generated by themselves and selling surplus power) have following three options, but each option has some problems.

- ① Self-consumption using EVs or batteries
It doesn't pay because EVs and batteries are still expensive.
- ② Selling power to a power company or an aggregator on the basis of negotiated transaction They are likely to beat down the price.
- ③ Direct transaction (P2P transaction) with a third party

Hard to process with existing technology and restricted by laws and regulations

Blockchain technology used for Bitcoin etc. has been attracting attention in various industries because it is excellent in efficiency and security due to traceability using distributed ledger. It is expected to enable P2P power transaction at a reasonable cost and in security.

2. Overview of Demonstration

Kansai Electric Power has developed a blockchain based platform for P2P power transaction in alliance with University of Tokyo, Nihon Unisys and Mitsubishi UFJ Bank, aiming its commercialization. Demonstration of three pricing logics was conducted as below.

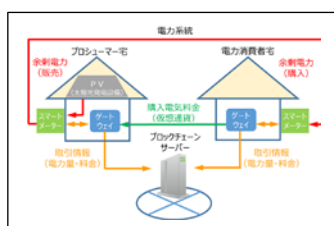
- (1) continuous session (2) single price auction (3) dynamic pricing linked to power exchange

Specifically, we simulated a prosumer and seven customers at our testing centre and the platform automatically processes the transaction price determined in the above pricing logics and reading data of each smart meter installed at participants from contract making through settlement using blockchain technology.

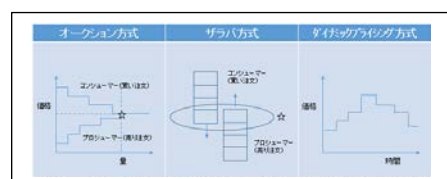
We examined how to commercialize P2P power transaction, verifying technical feasibility of blockchain based transaction.

3. Future Plans

Based on these results, we will clarify legal problems of P2P power transaction and try to improve customer convenience in cooperation with financial institutions in addition to proceeding with empirical researches to broaden the application range of blockchain technology in order to finally realize more energy efficient society.



scheme of demonstration



transaction pricing logics