

ENABLING ADAPTIVE AND SECURE MICROGRID ENERGY TRANSACTIONS USING BLOCKCHAIN

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Microgrids, localized energy distribution networks, are gaining traction due to their ability to integrate renewable energy sources and enhance energy efficiency. However, effective energy trading within microgrids faces hurdles, including centralized control and security vulnerabilities. This research proposes a secure, decentralized transaction system for microgrid energy trading leveraging blockchain technology. Decentralization offers increased system robustness by eliminating single points of failure, while blockchain ensures transparent and tamper-proof record-keeping.

The proposed approach aligns with the benefits of decentralized transaction management systems highlighted in the reference document. It ensures enhanced security through blockchain's cryptographic methods and promotes transparency with immutable record-keeping. Additionally, the integration of smart contracts reduces manual intervention within the microgrid, mirroring their use for automation in various industries as mentioned in the reference document. By drawing on these strengths of decentralized transaction management systems, this research aims to address the limitations of centralized control and security concerns hindering effective energy trading in microgrids.