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Rashid, M.M.[a] , Salam, S.M.[a] , Ali, M.Y.[b] , Yvette, S.[c]

Flywheel energy storage for peak shaving and load balancing in power grids
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[a] Department of Mechatronics Engineering, International Islamic University Malaysia, Jalan Gombak, Kuala Lumpur, 53100, Malaysia
[b] Mechanical Engineering Programme Area, Universiti Teknologi Brunei, Jalan Tungku Link Gadong, Bandar Seri Begawan, BE1410, Brunei Darussalam
[c] Asia Pacific University, Jalan Teknologi 5, Taman Teknologi Malaysia, Kuala Lumpur, 57000, Malaysia

Abstract
Energy storage systems, via their peak shaving applications, provide sustainable options for boosting the current capacity of distribution networks to ensure their continued safe and dependable operation in the face of rising load demands and a greater share of renewable energy generation. This study looks at the feasibility of using a flywheel energy storage technology in an IEEE bus test distribution network to mitigate peak demand. Energy losses in a simulated flywheel system are measured using an experimental setup, and an empirical model is built to account for these losses. Additionally, the peak power of the feeder is measured together with the energy lost from the flywheel using an optimum power flow calculation. © 2024 Author(s).

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Correspondence Address
Salam S.M.; Department of Mechatronics Engineering, Jalan Gombak, Malaysia; email: s.munimus@live.iium.edu.my

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