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Integrated renewable energy micro-grid for meeting peak hours demand (Conference Paper)

Aznan, K.A.^a, Khan, S.^a, Yaacob, M.^a, Khalifa, O.O.^a, Aboadla, E.^a, Tohtayong, M.^a, Khalil, A.^a, Muhaisen, N.A.N.^a, Tan, N.M.L.^b

^aDepartment of Electrical and Computer Engineering, Kulliyah of Engineering, International Islamic University Malaysia, Malaysia

^bDepartment of Electrical Power Engineering, Universiti Tenaga Nasional, Malaysia

Abstract

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In the TNB-based conventional system, the power demand varies randomly depending upon seasons and months of the year including festive occasions, reaching peak in some hours of days of some months. Sometime a heavy demand (in MW) falls at a time of a day. Such heavy energy demands need to be transported from far-away power stations over long lengthy transmissions causing energy loss not less than 20% in most of the cases. This paper presents load demand variation scenario, identifying peaks, and finally suggesting a strategy for meeting the peak demand from Renewable Energy Sources (RES) of solar and wind. An integrated RES-based microgrid is suggested with analytical and simulation results showing how the peak demand is being met from alternative sources of solar. The results of this paper find applications in suggesting RES-based generations for distributed locations within the low-voltage distribution network of Malaysian Electric Utility Tenaga Nasional Berhad. © 2018 Institution of Engineering and Technology. All rights reserved.

SciVal Topic Prominence ⓘ

Topic: Wind power | Wind | Wind resource

Prominence percentile: 98.934 ⓘ

Indexed keywords

Engineering controlled terms: Electric utilities Energy dissipation Voltage distribution measurement

Engineering uncontrolled terms: Alternative source Conventional systems Energy demands Low voltage distribution network Power demands Renewable energies Renewable energy source Solar and winds

Engineering main heading: Renewable energy resources

Funding details

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Ghorbanian, M.J., Goodarzvand, F., Poudaryaei, A. (2015) 2014 4th International Conference on Engineering Technology and Technopreneuship, ICE2T 2014

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