



# Document details

< Back to results | 1 of 1

📄 Export 📄 Download 🖨️ Print ✉️ E-mail 📄 Save to PDF ☆ Add to List More... >

Test Engineering and Management  
Volume 81, Issue 11-12, November-December 2019, Pages 5637-5646

## Technical and economic feasibility of solar powered air conditioners in Brunei Darussalam (Article)

Alhakmi, E.<sup>a</sup>, Khalil, A.<sup>a</sup> ✉️, Hamid, Z.<sup>a</sup>, Peng, A.S.<sup>a</sup>, Uddin, M.R.<sup>a</sup>, Jaafar, S.<sup>a</sup>, Mohammed, I.<sup>a</sup>, Khan, S.<sup>b</sup>, Yaacob, M.<sup>b</sup> 👤

<sup>a</sup>Electrical and Electronic Engineering Department, Universiti Teknologi Brunei, Jalan Tungku Link Gadong, BE1410, Brunei Darussalam

<sup>b</sup>Electrical and Electronic Engineering Department, International Islamic University of Malaysia, Kuala Lumpur, 50728, Malaysia

### Abstract

✓ View references (15)

On daily basis, a huge amount of fossil fuel is being burnt which results in a substantial amount of greenhouse gasses being released into the atmosphere. Air conditioners are becoming more common and are a major strain on energy demands especially in tropical climate countries like Brunei Darussalam. The photovoltaic electricity is a clean and sustainable. In this paper, we present a techno-economic feasibility study for solar powered air conditioning system in Brunei Darussalam. Four alternatives are investigated, 1) the PV system supplies 50% of the loads, 2) the PV system supplies 75% of the loads, 3) the PV system supplies 100% of the loads, and finally 4) the PV system supplies 125% of the loads. Where in the last two case the excess electricity is sold to the grid. With 0.3\$ feed-in tariff. The best alternative is the grid-connected PV system with 125% capacity factor which was chosen due to its short payback time period as well as high profit rate over the lifetime of the project. © 2019 Mattingley Publishing. All rights reserved.

### SciVal Topic Prominence ⓘ

Topic: Refrigerators | Air Conditioning | Compressors

Prominence percentile: 57.518 ⓘ

### Author keywords

Air Conditioner Feasibility PV System Solar Energy

### Indexed keywords

Engineering controlled terms: Domestic appliances Economic analysis Fossil fuels Solar energy

Engineering uncontrolled terms: Capacity factors Economic feasibilities Feasibility Grid connected PV system Photovoltaic electricities PV system Techno-economic feasibility Tropical climates

Engineering main heading: Air conditioning

Metrics ⓘ View all metrics >



PlumX Metrics ▾

Usage, Captures, Mentions, Social Media and Citations beyond Scopus.

Cited by 0 documents

Inform me when this document is cited in Scopus:

Set citation alert >

Set citation feed >

### Related documents

A methodology to control the interior temperature of vehicles parked under the sun

Gunawardhana, H.P.B. , Chamath, L.G. , Sewwandi, G.A. (2016) *2016 Manufacturing and Industrial Engineering Symposium: Innovative Applications for Industry, MIES 2016*

A portable renewable solar energy-powered cooling system based on wireless power transfer for a vehicle cabin

Pan, H. , Qi, L. , Zhang, X. (2017) *Applied Energy*

Solar photovoltaic based air cooling system for vehicles

Pang, W. , Yu, H. , Zhang, Y. (2019) *Renewable Energy*

View all related documents based on references

Find more related documents in Scopus based on:

Authors > Keywords >

References (15)

[View in search results format >](#)

All  Export  Print  E-mail  Save to PDF  Create bibliography

- 
- 1 Ahmad, A., Othman, H.M.  
Electricity consumption in Brunei Darussalam: Challenges in energy conservation  
(2014) *International Energy Journal*, 14 (4), pp. 155-166. Cited 13 times.  
<http://www.ericjournal.ait.ac.th/index.php/eric/article/viewFile/1022/442>
- 
- 2 Daut, I., Adzrie, M., Irwanto, M., Ibrahim, P., Fitra, M.  
Solar powered air conditioning system ([Open Access](#))  
(2013) *Energy Procedia*, 36, pp. 444-453. Cited 26 times.  
<http://www.sciencedirect.com.ezproxy.um.edu.my/science/journal/18766102>  
doi: 10.1016/j.egypro.2013.07.050  
[View at Publisher](#)
- 
- 3 Gugulothu, R., Somanchi, N.S., Banoth, H.B., Banothu, K.  
A review on solar powered air conditioning system  
(2015) *Procedia Earth and Planetary Science*, 11, pp. 361-367. Cited 16 times.  
2015
- 
- 4 Bilgili, M.  
Hourly simulation and performance of solar electric-vapor compression refrigeration system  
(2011) *Solar Energy*, 85 (11), pp. 2720-2731. Cited 39 times.  
doi: 10.1016/j.solener.2011.08.013  
[View at Publisher](#)
- 
- 5 Aroon, A., Maneeinn, C., Khomfoi, S.  
Reactive power compensation using inverter air-condition for smart home application  
(2017) *ECTI-CON 2017 - 2017 14th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology*, art. no. 8096230, pp. 290-293.  
ISBN: 978-153860449-6  
doi: 10.1109/ECTICon.2017.8096230  
[View at Publisher](#)
- 
- 6 Cong, G., Wang, R., Wang, X., Yang, X., Feng, L.  
Design and experimental study of pv air conditioning drive system  
(2017) *Proceedings - 2017 Chinese Automation Congress, CAC 2017*, 2017-January, pp. 7912-7915.  
ISBN: 978-153863524-7  
doi: 10.1109/CAC.2017.8244214  
[View at Publisher](#)
-