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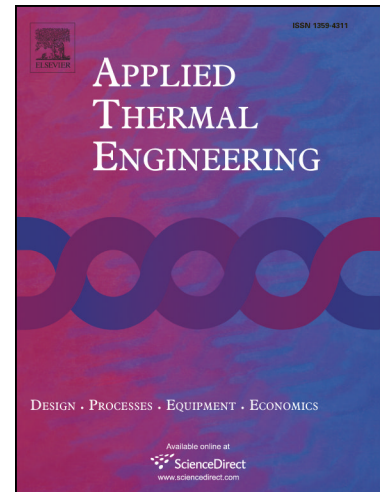
Experimental investigation of the thermal power pump cycle – proof of concept

Jack Nihill, Abhijit Date, Jason Velardo, Sandesh Jadkar

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## Experimental investigation of the thermal power pump cycle – proof of concept

Jack Nihill (Corresponding Author)  
School of Engineering, RMIT University  
PO Box 71, Bundoora, Victoria 3083, Australia  
[s3240002@student.rmit.edu.au](mailto:s3240002@student.rmit.edu.au)  
Work Phone: +61 430 971 630

Abhijit Date  
School Engineering, RMIT University  
PO Box 71, Bundoora, Victoria 3083, Australia  
[abhijit.date@rmit.edu.au](mailto:abhijit.date@rmit.edu.au)

Jason Velardo  
School Engineering, RMIT University  
PO Box 71, Bundoora, Victoria 3083, Australia  
[s3286569@student.rmit.edu.au](mailto:s3286569@student.rmit.edu.au)

Sandesh Jadkar  
University of Pune, India  
[sandesh@physics.unipune.ac.in](mailto:sandesh@physics.unipune.ac.in)

### **Abstract:**

This paper presents an experimental investigation of a water pump based on the thermal power pump (TPP) cycle. The pump is intended to effectively utilise low grade heat sources (below 100°C) in order to pump water at high pressures. A piston-cylinder device has been created that operates on the TPP cycle and it is shown that significant delivery pressures are obtainable, up to 20m head for a heat source of approximately 80°C. The overall efficiencies obtained by the TPP system investigated here ranged from 0.36-0.48% for delivery heads from 5-20m. The experimental results show that due to thermal cycling of the system, around 55-60% of heat input is not available for work conversion.

### **Keywords:**

Renewable energy, Solar thermal, Thermal pump, Water pump.

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