POLITEKNIK MALAYSIA
MUKAH

AN ALTERNATIVE FOR VAPOR COMPRESSION REFRIGERATOR BY USING PELTIER ELEMENT

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DEPARTMENT OF MECHANICAL ENGINEERING
POLITEKNIK MUKAH

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AN ALTERNATIVE FOR VAPOR COMPRESSION REFRIGERATOR BY USING PELTIER ELEMENT

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This report is submitted to the Department of Mechanical Engineering in partial fulfilment of the requirements for graduation Diploma in Mechanical Engineering

PROJECT REPORT VERIFICATION

This report entitled **An Alternative for Vapor Compression Refrigerator by Using Peltier Element** has been submitted and reviewed as to meet the conditions and requirements of project writing.

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"We declare that this report is our own work except each piece that we have explained the source"

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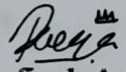
2. **Signature** : 
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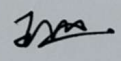
3. **Signature** : 
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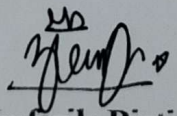
5. **Signature** : 
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ABSTRACT

An alternative for vapor compression refrigerator by using Peltier element is another alternative that can help students to store their food especially food such as fresh milk and fruit in the hostel. This research is produced to build a refrigerator by using Peltier element and to design a device that can keep food for a longer period than the room temperature. By using an alternative for vapor compression refrigerator by using Peltier element could save much energy usage and it also can be powered by a DC current. The method that had been used to build this device are fabrication process and analysis the temperature that can be achieved by the Peltier element. As for the result for this research it has achieve the objective by producing a refrigerator by using Peltier element. The minimum temperature that can be achieved by using Peltier element is 11°C within 45 minutes.

(Keywords: Vapor compression refrigerator, thermoelectric cooling, Peltier effect, thermoelectric refrigeration)

ABSTRAK

An alternative for vapor compression refrigerator by using Peltier element adalah salah satu pendekatan yang dapat menbantu para pelajar untuk menimpan makanan seperti buah-buahan dan minuman di asrama. Kajian ini adalah untuk membina peti sejuk yang menggunakan Peltier element dan mencipta satu alat yang dapat menyimpan makanan dan minuman untuk jangka yang agak lama berbanding dengan penyimpanan di suhu persekitaran. Selain itu, dengan menggunakan an alternative for vapor compression refrigerator by using Peltier element dapat menjimatkan penggunaan tenaga dan ia juga dapat dihidupkan dengan menggunakan arus DC. Proses yang digunakan dalam penghasilan projek ini adalah dengan menggunnakan kaedah fabrikasi dan analisis suhu yang dapat dicapai oleh Peltier element. Hasil daripada kajian ini telah mencapai objektif dengan terhasilnya sebuah peti sejuk dengan menggunakan Peltier element. Suhu minimum yang dapat dicapai oleh Peltier element ialah 11°C dalam masa 45 minit.

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