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Study of laptop cooling pad ventilation efficiency / Show Hong Han.

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STUDY OF LAPTOP COOLING PAD VENTILATION EFFICIENCY

By
Show Hong Han

A thesis submitted in partil fulfilment of
the requirement for the award of the degree of
Bachelor of Applied Science (Physics, Electronics and Instrumentation)

**FACULTY OF SCIENCE AND TECHNOLOGY
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**JABATAN SAINS FIZIK
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UNIVERSITI MALAYSIA TERENGGANU**

PENGAKUAN DAN PENGESAHAN LAPORAN PENYELIDIKAN SFZ 4399A/B

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk **STUDY OF LAPTOP COOLING PAD VENTILATION EFFICIENCY** oleh **SHOW HONG HAN**, no.matrik: **UK 14797** telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Fizik sebagai memenuhi sebahagian daripada keperluan memperoleh Ijazah Sarjana Muda Sains Gunaan (Fizik Elektronik & Instrumentasi), Fakulti Sains dan Teknologi, UMT.


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DECLARATION

I hereby declare that this thesis entitled **Study of Laptop Cooling Pad Ventilation Efficiency** is the result of my own research except as cited in the references.

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STUDY OF LAPTOP COOLING PAD VENTILATION EFFICIENCY

ABSTRACT

Most of the current available laptop cooling pad is designed in the pattern of covers the entire chassis of laptop. This type of pattern lead to a problem of low ventilation efficiency when the laptop cooling pad is operates. The aim of this project is to search for a cooling method that capable to increase laptop cooling pad ventilation efficiency. In order to achieved the aim, three objectives were set which included designed of heat sensing circuit, developed of adjustable fan position laptop cooling pad and evaluation of cooling methods and laptop cooling pads. A heat sensing circuit, which is powered by pheriparal interface controller (PIC), and an adjustable fan position laptop cooling pad was fabricated. Evaluation of several cooling methods and laptop cooling pads were carried out in a controlled room temperature. As a result, the developed laptop cooling pad in this project has the highest ventilation efficiency of 11.3°C/Watt. Laptop cooling pad ventilation efficiency can be enhances by implant a proper cooling method on it. This is important because it help to reduce electrical energy consumption and also provide convenient to laptop's user.

PENGAJIAN KECEKAPAN VENTILASI PLAT PENYEJUK KOMPUTER RIBA

ABSTRAK

Kebanyakan plat penyejuk komputer riba yang boleh didapati direka dalam bentuk merangkumi keseluruhan casing komputer riba. Bentuk rekaan tersebut telah menyebabkan masalah kecekapan ventilasi yang rendah apabila plat penyejuk komputer riba beroperasi. Tujuan utama projek ini adalah untuk mencari satu kaedah penyejukan yang mampu menambah kecekapan ventilasi plat penyejuk komputer riba. Demi mencapai tujuan tersebut, tiga objektif telah ditetapkan dalam projek tersebut iaitu mereka litar mengesan haba, menghasilkan satu plat penyejuk komputer riba dengan posisi kipasnya yang boleh dilaras, dan penilaian kaedah-kaedah penyejukan serta beberapa jenis plat penyejuk komputer riba. Satu litar pengesan haba yang dioperasi oleh 'peripheral interface controller', (PIC) dan plat penyejuk komputer riba, dengan posisi kipasnya yang boleh laras telah dihasilkan. Penilaian beberapa kaedah-kaedah penyejukan dan plat penyejuk komputer riba telah dijalankan dalam satu bilik di mana suhu bilik tersebut telah dikawal. Keputusannya menunjukkan bahawa plat penyejuk yang dihasilkan mempunyai nilai kecekapan ventilasi yang paling tinggi iaitu $11.3^{\circ}\text{C}/\text{Watt}$. Kecekapan ventilasi plat komputer riba boleh ditingkatkan dengan mengaplikasikan kaedah penyejukan yang sesuai kepada plat penyejuk. Pekara ini adalah penting kerana ia bukan sahaja dapat mengurangkan penggunaan tenaga elektrik malah ia juga dapat memberi keselesaan kepada pengguna komputer riba.