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Design and development of automatic water boiler system model  
with programmable intelligent computer (PIC) / Khaw Wei Kiat.

PERPUSTAKAAN SULTANAH NUR ZAHIRAH  
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Lihat sebelah

**HAK MILIK**  
PERPUSTAKAAN SULTANAH NUR ZAHIRAH UMT

**DESIGN AND DEVELOPMENT OF AUTOMATIC WATER BOILER SYSTEM  
MODEL WITH PROGRAMMABLE INTELLIGENT  
COMPUTER (PIC) MICROCONTROLLER**

**By  
Khaw Wei Kiat**

**A proposal submitted in partial fulfillment  
of the requirement for the award of the degree of  
Bachelor of Applied Science  
(Physics Electronics and Instrumentation)**

**DEPARTMENT OF PHYSICAL SCIENCES  
FACULTY OF SCIENCE AND TECHNOLOGY  
UNIVERSITI MALAYSIA TERENGGANU**

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**JABATAN SAINS FIZIK  
FAKULTI SAINS DAN TEKNOLOGI  
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**PENGAKUAN DAN PENGESAHAN LAPORAN PENYELIDIKAN SFZ 4399A/B**

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **Design and Development of Automatic Water Boiler System Model with Programmable Intelligent Computer (PIC)** oleh **Khaw Wei Kiat**, no. matrik: **UK 13297** telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Fizik sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah Sarjana Muda Sains Gunaan (Fizik Elektronik & Instrumentasi), Fakulti Sains dan Teknologi, UMT.

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## DECLARATION

I hereby declare that this project report entitled **Design and Development of Automatic Water Boiler System Model with Programmable Intelligent Computer (PIC)** is the result of my own research except as cited in the references.

Signature

  
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Date : 29 APRIL 2009

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## **DESIGN AND DEVELOPMENT OF AUTOMATIC WATER BOILER SYSTEM MODEL WITH PROGRAMMABLE INTELLIGENT COMPUTER (PIC)**

### **ABSTRACT**

Nowadays, the water boiler is a popular product. There are many types of water boilers in the market. However for most of the products, water has to be refilled into water boiler manually before using it. This project is done to fabricate an automatic water boiler system model to improve the current water boiler. The water boiler can refill and boil the water automatically. PIC16F877A has been selected to be used in this project as to control the system flows. The temperature sensor (LM35) is used to sense the water temperature and the water level sensors are used to sense the water level in the water boiler and control the water refilling process. In order to fabricate out the product, both the software model and hardware model are completed. The software model is done by writing a source code for the system. The software model is evaluated by using the MINI40 PIC Training Kit, BZ022. For the hardware model, the circuits of the product are designed and fabricated out by soldering all the components on the strip board. The circuits are then assembled into a complete model. The model is packaged in a cabinet with vessel.

# **REKA BENTUK DAN PEMBANGUNAN BAGI PERMODELAN SISTEM ALAT PEMANAS AIR AUTOMATIK DENGAN KOMPUTER BESTARI BOLEH ATURCARA (PIC)**

## **ABSTRAK**

Kebelakangan ini, alat pemanas air merupakan satu produk yang popular. Terdapat banyak jenis alat pemanas air dalam pasaran. Bagaimanapun, kebanyakan alat pemanas air memerlukan pengisian air secara manual sebelum diguna. Tujuan projek ini adalah untuk memfabrikasikan satu model sistem alat pemanas air automatik bagi menambakbaik alat pemanas air sedia ada. Alat pemanas air ini boleh mengisi semula dan mendidih air di dalamnya secara automatik. Mikropengawal PIC yang digunakan untuk mengawal sistem aliran dalam projek ini adalah PIC16F877A. Penderia suhu (LM35) digunakan menderia suhu air manakala penderia paras air adalah untuk menderia paras air dan mengawal proses pengisian air dalam alat pemanas air ini. Dengan tujuan untuk memfabrikasikan alat ini, kedua-dua permodelan perisian dan permodelan perkakasan adalah disiap fabrikasikan. Model perisian adalah dibuat dengan menulis satu kod sumber untuk sistem. Model perisian adalah dinilai dengan menggunakan MINI40 PIC Training Kit, BZ022. Bagi model perkakasan, litar-litar bagi produk adalah direka dan difabrikasikan dengan memateri semua bahagian-bahagian pada papan jalur. Litar-litar itu adalah kemudiannya dipasang menjadi satu model lengkap. Model dibungkus dalam sebuah kabinet yang mempunyai satu bekas silinder.