ELECTRICAL AUTOMATION SYSTEMS TOWARDS INTELLIGENT AND ENERGY EFFICIENCY APPLICATIONS

Musse Mohamud Ahmed

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ELECTRICAL AUTOMATION SYSTEMS

TOWARDS

INTELLIGENT AND ENERGY EFFICIENCY

APPLICATIONS

Musse Mohamud Ahmed

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CHAPTER 20

PIC 16F877A FOR HYBRID VEHICLE CONTROLLER

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20.1 Introduction

The study presented in Chapters 19 and 20 promotes the alternative hybrid resource and technology. Focusing on electrical components and overall control system the vehicle is developed and uses a fueled engine and electric motor as the source of power. The proposed prototype had dual purpose; the first was to develop an understanding of HEVs and secondly to showcase the ability to control the system for actual fabrication. Virtually all the hybrid electrical components were experimental prototypes, and as such were not tested as rigorously as production part as the model will serve as test bed for control strategy. DC motor selection, battery selection as well as the charging controller performance test has been conducted and shown. This work has been divided into chapters in book title: Electrical Automation Application Systems towards Intelligent Operations and Energy Efficiency, the Chapter numbers are chapter 19 and chapter 20.

PIC16F877A Microcontroller has not been discussed in Chapter 19 and for that reason, it will be discussed in this chapter in detail as it has the following features:

1. RISC CPU
2. MHz Clock input - 20 ns instruction cycle
3. 8K×14 word Flash program memory, 368×8 bytes RAM, 256×8 bytes of EEPROM Data Memory
4. Three independent timers
5. Two capture/compare (CCP), Pulse Width Modulation (PWM) generator modules
6. SPI and I2C Bus compatible
7. 10-bit, up to 8-channel Analog-to-Digital Converter (A/D)