

# **Mohammad (Max) Sobhani, B.Sc., M.A.Sc.**

---

---

607 – 109 Wentworth St. S, Hamilton, ON L8N 2Y8

Tel: (905) 963-7318

Cell: (289) 439-7155

Email: [mhsobhani@mhsobhani.ca](mailto:mhsobhani@mhsobhani.ca)

Website: [www.mhsobhani.ca](http://www.mhsobhani.ca)

---

## **Brief Portfolio**

---

### **2010:**

- **Hardware Design and Firmware Development: Industrial Vibration Meter**
  - Lowest power consumption DSP to date (TI C55XX series) used to power this handheld device
  - Extra flash memory used to handle the memory needs of the device
  - Security module designed to block the unauthorized use of the device
  - Digital accelerometer is used to detect vibrations up to 16g in all axes with 4mg accuracy
  - Firmware under development: this Section will be updated shortly
  - Firmware under development: this Section will be updated shortly
  - Firmware under development: this Section will be updated shortly
- **Hardware Design and Firmware Development: Voltage Reduction System – Second Generation**
  - “Contactor Driver Card” hardware designed to be compatible with first generation’s Relay Card.
  - This Section will be updated shortly
  - This Section will be updated shortly
  - This Section will be updated shortly
  - This Section will be updated shortly
  - This Section will be updated shortly

### **2009:**

- **Hardware Design: Geothermal Heating and Cooling System**
  - Managed more than 85 Analog and Digital I/O with multiple voltage logic levels with a single MCU
  - Two optional peripheral boards Designed for Display and Controlling an extra six Stepper Motors
  - Designed for managing Different logic levels of 3.3VDC, 5VDC, and 24VAC
  - BACnet® Network communications over RS-485 providing 1200m distance between each two devices
  - Designed for USB communications with PC Software
  - Designed for future expansions without hardware change with multiple spare signals of all logic levels
  - Safety hardwired signals bypassing the microcontroller for added reliability
- **Firmware Development: Voltage Reduction System**
  - Use of “Cooperative Multitasking” firmware design which strengthens system’s reliability
  - Utilized TCP/IP protocol to make VREMS a network-based device
  - Designed Web-pages as the GUI so the user entered data such as schedule, email, etc through them
  - Updatable weekly schedule through the web-pages which included 6 entries for each day of the week
  - Setting Email and Email Subject that are used for sending the Logged data in web-pages
  - Use of SNTP Protocol to retrieve time from the network periodically for timing accuracy
  - Logged data after each event and emailed data daily to the adjustable user email using SMTP server
- **Hardware Design: Test Jig for a Single Phase Energy Meter**
  - Precision time-keeping used for Calibrating the Real Time Clock on the Energy Meter
  - Calibrating the Time on the Energy Meter with errors as low as 2ppm
  - Interfaced with PC using the USB port as a device
  - Shared serial connection, connecting either the Computer or the Test Jig Board to the Energy Meter
  - Performs hardware tests on test points and checks Energy Meters’ energy consumption
  - Performs functional tests on Energy Meter Boards for quality assurance of the Energy Meter Boards
  - Simulating a load for the energy meter so that the metering IC is checked before calibration

**2008:**

- **Hardware Design and Software Development: Industrial Environment Control**
  - Hardware designed for interfacing several different sensors with a computer I/O Card
  - Hardware designed to control lights as well as industrial heaters, fans, and humidifiers
  - Prototype designed and developed for a 100 liter tank
  - Control software developed using Visual Basic
  - Control Software gathered information and controlled the peripheral devices
  - Customizable environmental parameters through the control software