Home Energy “Automization” System
Semester Team Project
INEN 689-701

Distance Education Project Proposal
Submitted to Dr. Lewis Ntaimo
Of the
University of Texas A&M – Industrial and Systems Engineering Department
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By

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Jason A LeBlanc
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Introduction

Energy experts have realized that global warming is a real problem. In an effort to educate the public, the concept of “green living” has been introduced. A societal trend toward “green living” has taken place over the past few years. It can be seen throughout the media as advertisement and television programs are promoting a “green” lifestyle.

There are many variables that contribute to the issues related to energy. One of the issues that individuals can control is the efficient utilization of energy in the residence. The “Home Energy Optimization and Management System” is a system designed to address the issues of consumption and management of the energy that is used to operate homes.

Objectives

The title of the system utilizes the non standard word “automization”. “Auto” meaning automation, and “mization” deriving from the word optimization. The justification of this project is the need for an engineered system to automate the optimization of energy utilization in homes. The primary objective of the system will be to enable home owners to achieve efficiency optimization, while maintaining comfortable living standards.

As a set of features, the system will have the following:

- Energy rate detection and selection
- “Forward thinking” environmental condition monitoring
- Appliance/Utility efficiency learning capability
- User interface and reporting
- Home owner behavior detection
- Efficient water heating, storage and usage
- Optimized temperature and humidity control
- Flexibility to expand energy sources (i.e. implement renewable energy)
- Configurable interface for home appliances, components etc.
- Etc.

Method

The methodology for designing this system will be to utilize research and Systems Engineering techniques. These methods will lend to determining what system components exist, and facilitate working towards a system level design of the central subsystem. The central subsystem will integrate all of the necessary components as well as providing an interface for future expansion. Additionally, where subsystems do not exist, high level integration requirements for the primary subsystem will be designed and presented.

This project will require expertise from many different disciplines and the utilization of advanced technology. In order to fully realize the system goal of optimization and comfort, advances in artificial intelligence will be required to implement the learning capabilities of the system. Also, implementation of application platforms such as Microsoft’s Silverlight 2 or Adobe Systems’ version 1.0 Adobe Integrated Runtime will allow the interface to the system to be rich, interactive and Internet based. Additionally, this system will serve as the hub for many of the ideologies and the growing societal need for reducing energy consumption.