University of Houston
College of Technology
Department of Engineering Technology
Computer Engineering Technology Program

Senior Project
ELET 4308 / 12973

Project Advisor:
Dr. F. Attarzadeh

Spring 2007

EASY POT
AUTO PLANT CARE SYSTEM

Presented by Team 11

Members:

Matthew Lok
Cristina Manzano
Vuong Nguyen
Emeka Nwagbara

Table of Content

Introduction

Project Objectives

- To create a system that removes the human error in plant care.
- Easy to operate
- Give the not so plant savvy individual a chance.
- Create a system that is affordable

The Motivation

- Many People own potted plants
- More businesses are bringing them into the workplace
- Require care
- Many people Kill them

Product Requirements

Product Goals
- Conceal tank
- Appearance

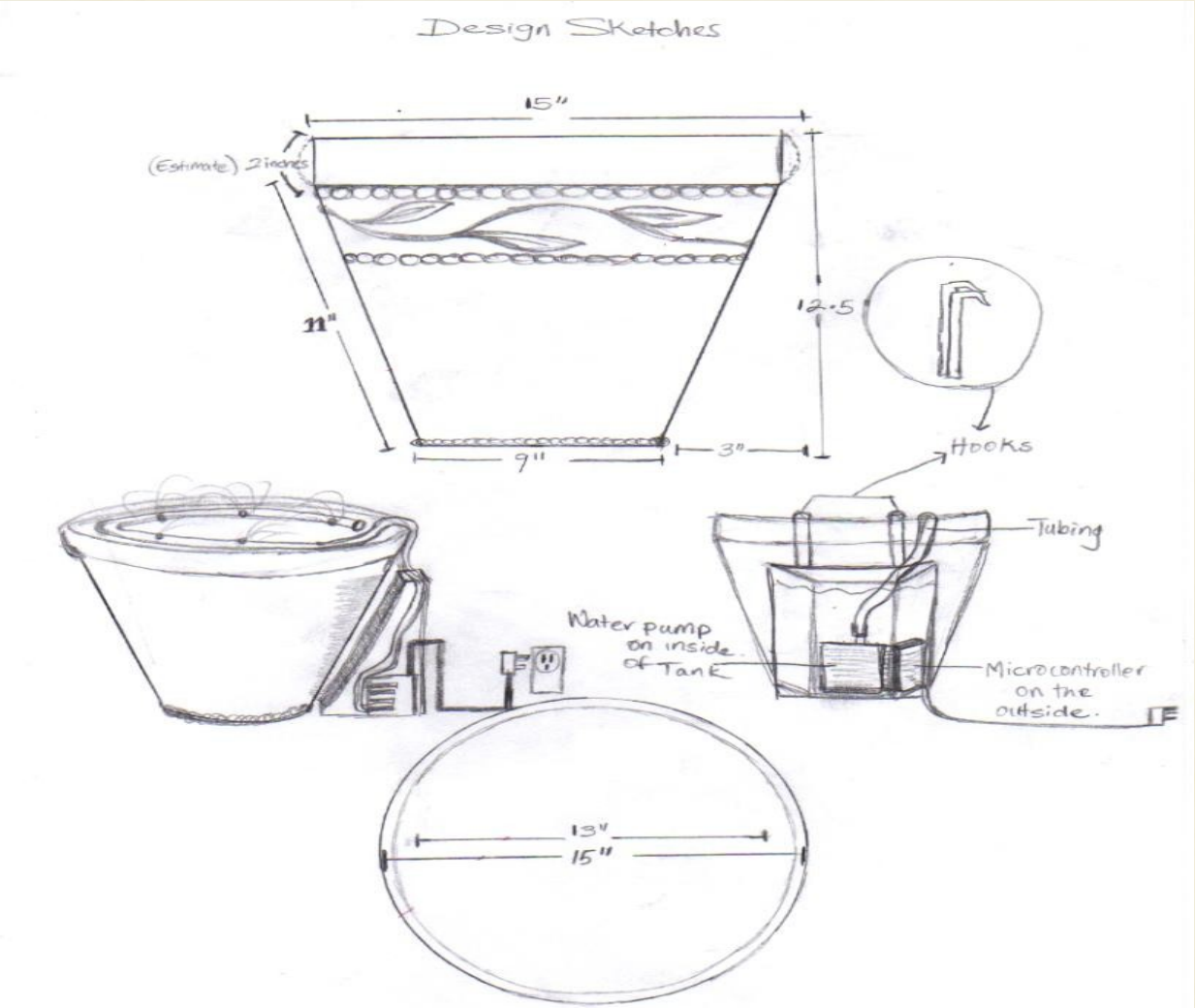
Hardware
- 12 V DC power supply
- Car water pump
- Water level sensor
- 4 in 1 soil tester
- 12 V incandescent lamps
- MINI-MAX/51-C2 microcontroller
- Keypad
- LCD
- Water tank

Software
- Micro C

Product Requirements (cont.)

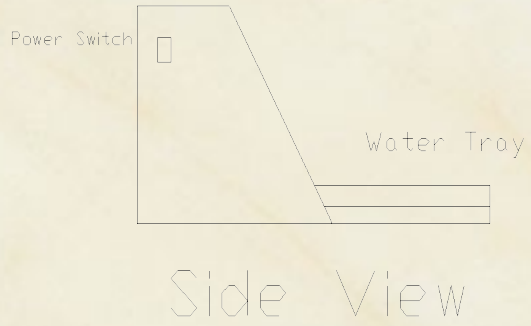
Design Alternatives

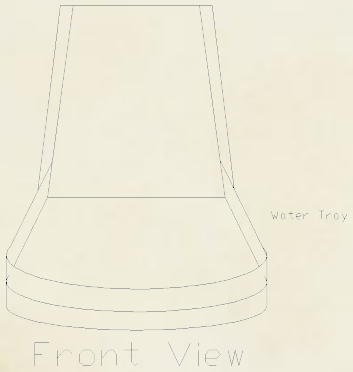
Initial Design

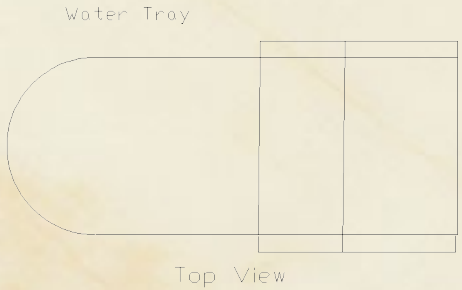


Design Alternatives (cont.)

Final Design







Design Alternatives (cont.)

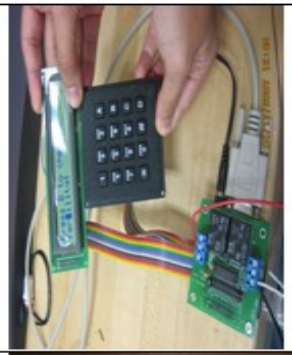
- Moisture sensor issues
  - Price range
  - Only one function
- pH sensor to fertility sensor
  - Fertility – the measure of nutrients in the soil; how well the plants grow is determined by fertility
- Increase size

Design Description

- Microcontroller
  - Asks for user input
  - Checks the moisture and fertility
- Sensors
  - Moisture sensor reads moisture from soil and sends a value to the microcontroller. It turns on the water pump when the moisture reaches a certain level
  - Fertility sensor reads moisture from soil and sends a value to the microcontroller. When the fertility reaches below an ideal level, the LED turns on
  - Water level sensor turns on LED when the water level goes below the float
- LED's
  - Red – water tank need to refill
  - Yellow – soil is infertile
  - Green – water pump is on

Construction Details

Costs Analysis

Part	Source	Actual Cost	Estimate Cost	Picture
MINI-MAX/51-set II • Microcontroller, Keypad, LCD, LED, Relay boards (2)	University of Houston	$177	$169	
Rapitest Mini pH-Moisture Tester • Soil sensor. Sensor is a 4 way plant sensor that measures light, moisture, PH and fertility.	Homesciencetools.com	$13.49	$15.00	
Vehicular windshield wiper pump • Low duty pump (Bought in the N.T. Auto salvage) Pump came with a water level sensor and tubing.	N.T. auto junk yard	$17.94	$20.00	
Battery	Senior Project Laboratory	16.50	7.99	

Cost Analysis (cont.)

Green and Orange LED Lights LEDs are incandescent lamps and operate at 12Vs.	EPO	1.50 each * 3 = 4.50	$5.00	
Lumber For the woodwork. Used for the platform and housing of "Easy Pot"	Home Depot	$10.00	$10.00	
Chemical Epoxy	EPO	$4.95	$7.95	
Solid mount wire kit	EPO	$6.95	$7.00	
Pot (plant included)	Home Depot	$16.00	$20.00	
Total		$259.87	269.94	

Conclusions

- Other indoor plant watering systems

Questions?