Moody Loody

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**Problem Description**

- **What?**
  - Beer Dispensing Device

- **Where?**
  - Public Events & Festivals

- **Why?**
  - Faster Service
DESIGN OPERATION – PARALLEL TASKS

- Input order with keypad
- Accept payment & I.D. customer
- Drop cup
- Move under pouring system
- Fill cup
- Serve cup
CONSTRAINTS

- Health and Safety
  - Beer Quality
  - Operator Safety

- Economic
  - Make profitable for distributors
  - Budget

- Political
  - Laws about machine serving beer
PROJECT OBJECTIVES

Primary –
- Serve a beer in under one minute
- Serve a specific amount of fluid to within an accuracy of ±0.5 fl oz.
- Serve repeatedly without excessive error
- Must be economically feasible

Secondary –
- Serve fluid at a desirable drinking temperature
THE DESIGN

- The Turntable Subsystem
THE DESIGN

The Turntable Subsystem Continued

- Lazy Susan
- Motor - Turntable Gears
- Cup Sensor
- Splash Cover
The Design

- The Cup Drop Subsystem

![Diagram of the Cup Drop Subsystem]

- DC Motor
- Cup Dispenser
- Cup Tower
- Cup Tower Base
The Design

- The Pouring Subsystem
THE DESIGN - ELECTRONICS

“The Brain” – Software Controller

- PIC32mx microcontroller
- PIC32mx expansion board
THE DESIGN - ELECTRONICS

“The Muscle” – Hardware Controller

- Solid-State Relays
- Voltage Regulator
- Outputs
- Inputs
The Design - Electronics

- Cup detection and position tracking

Infrared Emitter

Infrared Detector

Optical Encoder
THE DESIGN - ELECTRONICS

- User Interface

Keypad with LCD

DB25 Connector
THE DESIGN – BRAIN’S LOGIC

- Accept order
- Locate empty cup spot and dispense cup in it.
- Position empty cup under pouring system
- Open valve for configured time.
- Rotate table
Final Testing - Software Simulation

- Microcontroller burnt
- Performed software simulation of the microcontroller and its inputs.
- New one expected within a week
Final Testing Video – Mechanical
Evaluation of Results

Objectives
- Serve a beer in under one minute
- Serve beer to within an accuracy of ±0.5 fl oz.
- Serve repeatedly without excessive error
- Must be economically feasible
- Serve fluid at a desirable drinking temperature

Constraints
- Health and Safety
- Economical
- Political
**DESIGN COSTS**

- Finished Product Cost = **$979.11**

**Final Product**

- Structural: 30%
- Electrical: 24%
- Turntable: 29%
- Pouring: 13%
- Cup Drop: 4%
Future Recommendations

- Permanent motor mount on cup tower.

- Seek feedback from field vendors at a festival.

- Attempt to lower cost by using a thin metal instead of acrylic for the case.
QUESTIONS?