

ME, ECE, BE Capstone Design Programs

**Team #7 Automated Canned Pet Food Dispenser**

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**Problem Statement**

This project is a proof of concept design which allows a pet owner whose animal eats wet, canned food to be away from the pet for extended periods of time. The machine is able to store and open the cans and dispense the contents into a clean bowl each serving.

**Objectives**

- Store minimum of 7 cans of food
- Open can and dispense food
- Dispose of waste (food and cans)
- Provide a clean bowl for each serving

**Engineering Specifications**

- Handles all major can sizes
- Puncturing force of 200 lbf
- Max crushing force of 6,400 lbf
- Can final crushed height
  - Large steel can approximately 0.50"
  - Small steel and aluminum can < 0.125"
- Machine operation does not exceed 60 dB at feeding bowl as to not startle/scare pet

**Sponsors: Brian Blades**

**Product Architecture**



Figure 1: Automated Canned Pet Food Dispenser with housing



Figure 2: Automated Canned Pet Food Dispenser without housing

**Design Features**

**Loading Subsystem**

- Rotating carousel that can accommodate all sizes
- Rotating arm moves can into dispensing area



Figure 3: Loading Mechanism

**Can Crushing Subsystem**

- Locks can in place for puncturing
- Punctures can once locked
- Uses a series of switches and amp limits to compress food out of can



Figure 4: Crushing and Puncturing Mechanism

**Feeding Subsystem**

- Rotates to expose fresh bowl for each serving
- Isolates any uneaten/spoiled food from pet



Figure 5: Feeding Mechanism

**Safety**

- Protective housing to shield animal from any moving components
- Wireless internet camera allows owner to check on pet feeding while away
- Designed to provide pet with only clean and sanitary food for each serving

**Testing**

- Protocol: Run 7 cans of each size through all cycles
- Goal: 90% average food yield

**Results**

Can Size O.D./Height [in]	Average Food Yield
2.5625 / 1.4375	98%
2.9375 / 4	94%
3.375 / 1.5	97%
3.375 / 5	93%

- Confirms machine will automatically feed 7 cans of any size at selected time with over 90% food yield and maintain required pet safety and sanitation.

**Advisors: Capt. Dave**