# AI Coffee Prompt-to-Pour

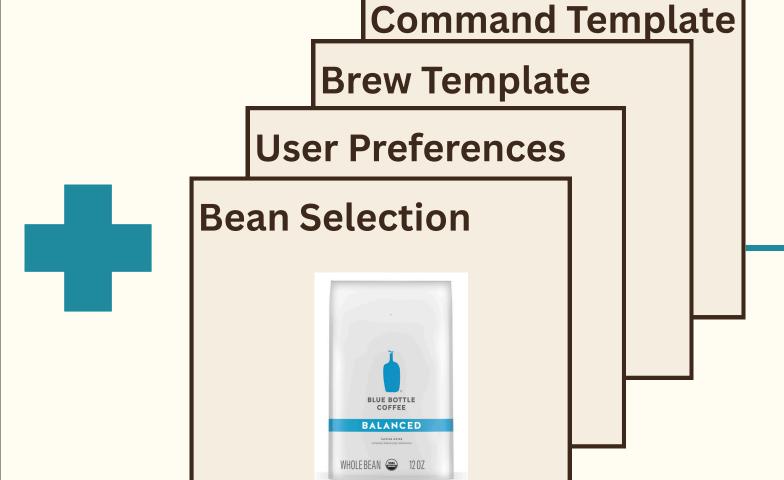
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#### **Machine Work Flow**

String

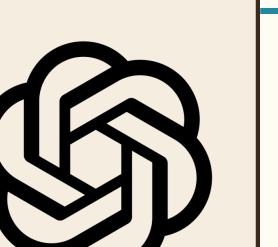
#### Prompt

"I want a cup of coffee with hints of citrus. Like an Arabian coffee"



Curated Prompt

Large Language Model



## Machine Queue

1) G-3600 2) S-A-20.6 3) R-5000 4) H-100 5) P-210-2.5

## 2) Bean Auger

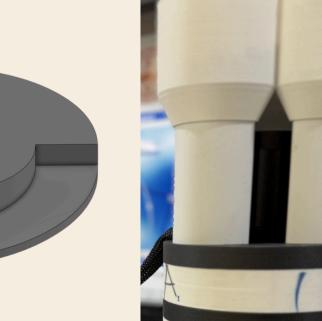
to 3600 eRPM or 514 RPM

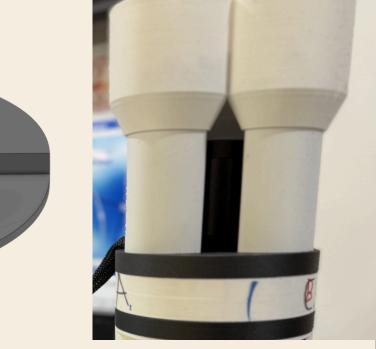
1)Grinder

Sets Grinder Motor

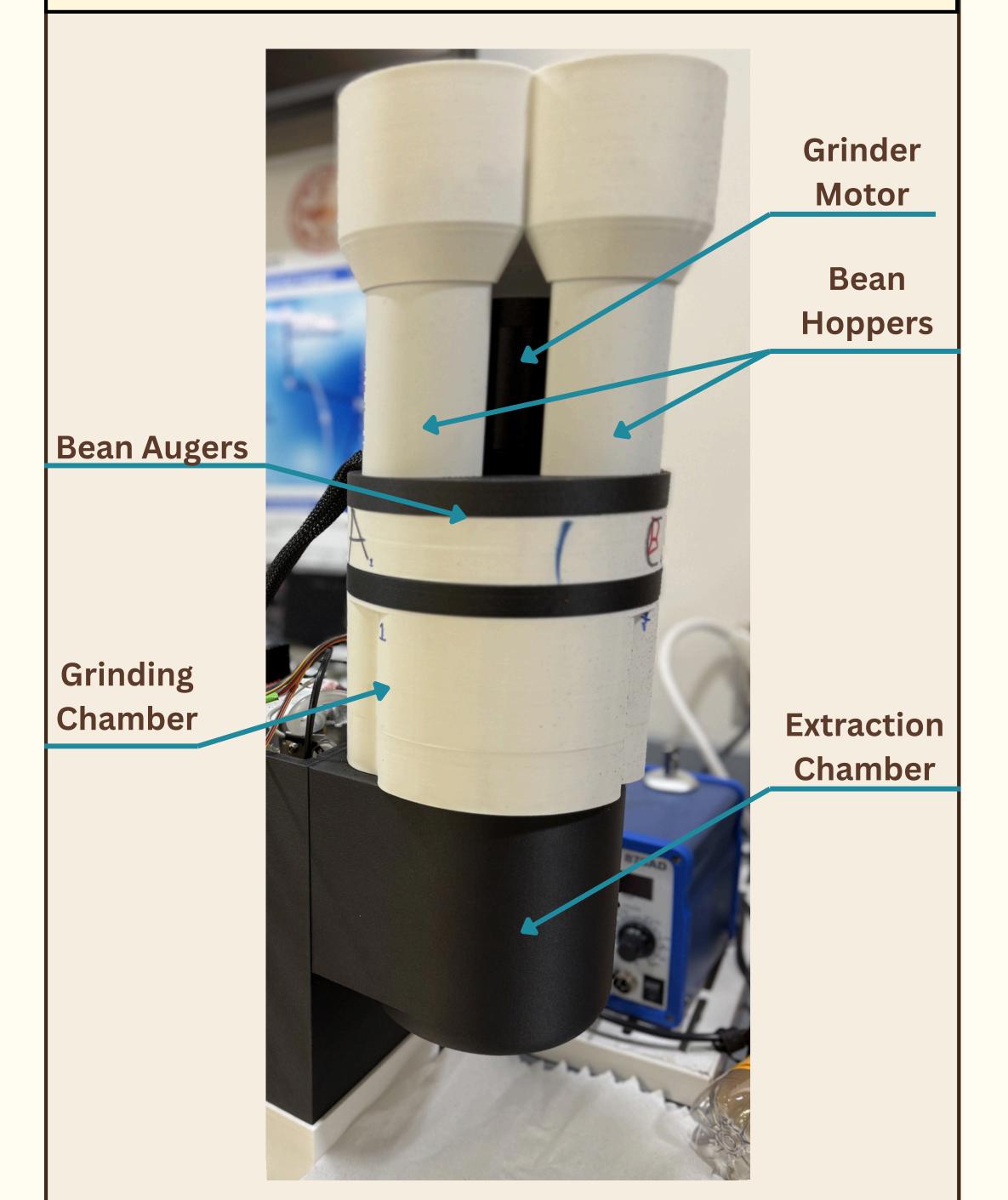
G-3600

S-A-20.6 Dispenses 20.6 Grams of Bean A into Grinding Chamber





## Machine Diagram



### **Machine Story**

#### Goals & Objectives

- Brew café-quality coffee from simple, natural-language prompts
- Independently tune grind, dose, temperature & pressure for flavor control
- Deliver an AI-mechatronics showcase in a single countertop unit

#### **Key Performance Metrics**

- Prompt-to-cup time 2 min 17 s (goal < 3 min)
- 20 / 20 blind tasters hit requested flavor notes "fruity", "bold", "smooth"
- Dispense Coffee Beans +/- 1g
- Fit on a typical Kitchen countertop

#### Challenges → Solutions

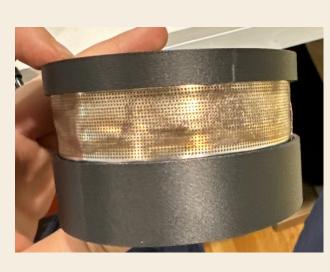
- Food safety at 95 °C / 9 bar → FDA-grade 316 Stainless Steel + ABS + Food Safe Epoxy Coatings
- High-Torque grinder Grinder → 3KW motor with low KV
- Filter clog & strength → Laser Perforated 316 Stainless Steel
- Jitterily Pump Flow → Control with Feedforward + PID and Kalmen filter state estimator

## 3) Extraction

Drum

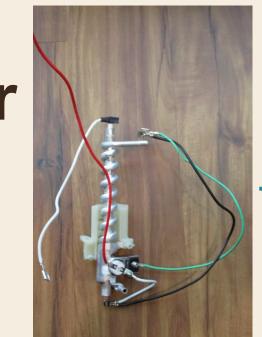
R-5000 Rotate extraction drum at 5000 eRPM or 714 RPM



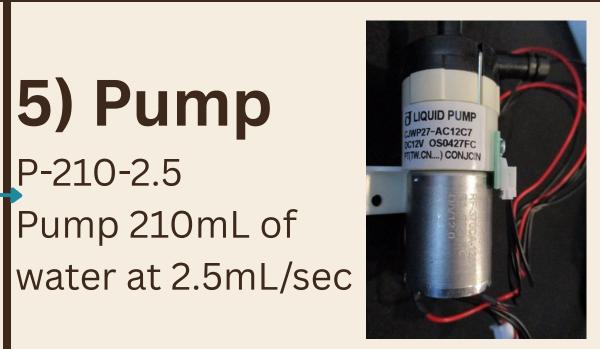


#### 4) Heater

H-100 Set Heater to 100% power



#### 5) Pump P-210-2.5 Pump 210mL of



### **Brewed Cup of Coffee**

