Power Rack Oven

“Bringing the oven to the 21st century.”

Yellow B
TWO AXIS MOVEMENT
TWO AXIS MOVEMENT

Vertical Adjustment
TWO AXIS MOVEMENT

Horizontal Actuation

Vertical Adjustment
VERTICAL DISPLACEMENT

- Lead screw driven.
  - Allows for wide range of heights.
  - Provides appropriate power.
  - Simple to operate.
  - Uses existing technologies.
HORIZONTAL DISPLACEMENT

- System of rollers
  - Powered rollers “drive” rack.
  - Provide stability from torques.
CONSIDERATIONS

• Cooking volume with mechanical systems.
  • Manipulating orientations to maximize work area.

• Coupling of horizontal/vertical displacements.
  • Ensuring secure fastening of elements.
  • Visualizing insulation constraints.
LESSONS LEARNED

- Able to fit components within traditional limits.
  - Household sized cookware still fit.
  - Room lost to horizontal mechanism.

- Rollers:
  - Optimally should not be cantilevered.
  - Need way to ensure consistent application of driving.

- Lead screws:
  - Four lead screws lead to over-constrained.
  - Possibility of jamming.
MARKET RELEVANCE

- Existing problems:
  - Oven safety.
  - Oven accessibility.

- Estimated $3 billion (US) market.

- Our product will satisfy oven needs and more.
# BENCHMARKING ANALYSIS

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- **Yellow B**
  - Best
  - Better
  - Fair
  - Not applicable
MOVING FORWARD

- Thermal expansion of mechanical elements.
- Insulation of drive systems.
- Ensuring final system can support cooking loads.
- Derive method for better horizontal actuation.