**Team E-720: H2-Elevate**

**Objective**
- Accessibility
- Speed
- Ease of operation for adjusting the height of a drinking fountain

**Concept Generation**
- Adjustable Height
- Easy to operate/understand
- Accessible for all users
- Minimum Effort needed

**Design**

- Foot pedal actuates drive gears
- Gears move rack and pinion to raise fountain
- Counterweights ease lifting and slow descent

**Prototype and Testing**

- Final “H2-Elevate” prototype consists of a wooden frame and pedal.
- In the interior of the product, there are two steel gear systems assembled with steel rods, standard bicycle chains, and bearings. The bowl and its platform are moved by two metallic sliders.

**Engineering Characteristics**
- Range of heights
- Time to adjust height
- Operational force required
- Stability of system

**Market Size**
- Able-bodied and handicapped drinking fountain users
- Businesses, government buildings, schools
- Market leader sold $505 million in 2012

**Customer Requirements**
- Must be operable by children, adults, and people with disabilities
- Level of maintenance and lifespan equivalent to regular fountain

**Customer Needs**
- Accessibility
- Speed
- Ease of operation for adjusting the height of a drinking fountain

**Market Size**
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**Operation of Product**
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**Tradeoffs**
- Takes time to adjust to desired height

**Prototype**

- “H2-Elevate” Final Prototype

**Test Results and Future Work**

<table>
<thead>
<tr>
<th>Weight of User (lbs)</th>
<th>Avg. Time to Raise to Full Height (sec)</th>
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<tbody>
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<td>140</td>
<td>7</td>
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<tr>
<td>160</td>
<td>5.33</td>
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<td>170</td>
<td>4.77</td>
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**Future Work**
- Locking mechanism
- Customer surveys
- Lifecycle testing
- Installation of piping system
- Optimize friction

**Reflections**
- The counterweight system must be improved to account for weight of parts and user
- The product eliminates the need for two drinking fountains of varying heights

**CAD drawing of fountain**

**Dimensions of fountain prototype**

**Key Innovation**
- Replaces a set of 2 fountains with a single unit to allow use by everyone
- Takes time to adjust to desired height

**Tradeoffs**
- Takes time to adjust to desired height

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- Must be operable by children, adults, and people with disabilities
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**Constraints**
- Fully mechanical system (no electricity)

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