product contract

at a glance...

• touchscreen and cooking surface are durable, lasting at least 10 years before replacements are needed

• touchscreen and cooktop are sealed around the edges and scratch & water-resistant for easy cleaning after use

• user interface is visible to user, screen has dimensions of at least 4” x 6” and is inclined at an angle between 3 to 17 degrees

• a majority of metal pots and pans can be sensed by stove (aluminum, steel, etc.)

• cooking space is large enough (at least 20” x 20”) to fit at least 4 average-sized pots & pans

• intuitive user interface, with 4 or less steps to heat or cool items, and only 1 step to turn off the entire stovetop

• each heating element can sense when it is partially covered by a pot or pan with a resolution of at least 1/4 of the element’s area

• cooking surface material has a thermal conductivity of less than 2 W/(m-K), allowing heat to be contained in desired locations

• non-cooktop surfaces are cool and safe to touch, never going above 100 degrees Fahrenheit when stovetop is in use

• stovetop cooks food in same amount of time (1:1 ratio) as a traditional stovetop
Product Contract
Team Silver
November 5, 2008

Product Description
A electric stovetop containing an array of burner elements to provide more versatile heating.

Intended Customers
Homeowners and contractors that purchase high-end appliances (age 30-60)

Market
Large Appliances

<table>
<thead>
<tr>
<th>Customer Needs</th>
<th>Product Attributes</th>
<th>Specifications</th>
<th>Owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stovetop</td>
<td>Size</td>
<td>Cooking surface has dimensions of at least 20&quot; x 20&quot;</td>
<td>S. Mellott</td>
</tr>
<tr>
<td>Can hold at least 4 average-sized pots</td>
<td>Impact resistance</td>
<td>Stovetop surface withstands at least 100MPa in 3-point bending</td>
<td>T. Green</td>
</tr>
<tr>
<td>Durable cook surface</td>
<td>Scratch resistance</td>
<td>Stovetop surface has a Vickers hardness of at least 200kg*mm^2</td>
<td>J. Franklin</td>
</tr>
<tr>
<td></td>
<td>Material life span</td>
<td>Surface lasts at least 10 years before replacement</td>
<td>S. Mellott</td>
</tr>
<tr>
<td>Cleanable cook surface</td>
<td>Water resistant</td>
<td>Sufficient sealing around the edges of the cooktop for damp sponge cleaning</td>
<td>M. Carvajal</td>
</tr>
<tr>
<td>Contains heat to specified location</td>
<td>Thermal conductivity of cooktop</td>
<td>Surface material has conductivity less than 2 W/m-K</td>
<td>N. Sharpe</td>
</tr>
<tr>
<td>Fast cook speeds</td>
<td>Time to boil water</td>
<td>3 minutes to boil 2L of water (same as traditional stove)</td>
<td>H. Mohamed</td>
</tr>
<tr>
<td>Power Electronics</td>
<td>Failure rate</td>
<td>Stovetop fails in recoverable way &lt;1% of time</td>
<td>M. Bollini</td>
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<tr>
<td>---------------------------------------------------------------------------------</td>
<td>--------------------------------------------------</td>
<td>-----------------------------------------------</td>
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<tr>
<td></td>
<td></td>
<td>Stovetop fails in safe, nonrecoverable way &lt;0.1% of time</td>
<td>M. Bollini</td>
</tr>
<tr>
<td>Safe for the user to operate</td>
<td>Fire proof</td>
<td>Insulation rated to at least 2600 Farenheit</td>
<td>N. Sharpe</td>
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<tr>
<td></td>
<td></td>
<td>Wiring does not short/spark on case</td>
<td>S. Mellott</td>
</tr>
<tr>
<td></td>
<td>Non-cooktop surfaces cool to touch</td>
<td>Non-cooktop surfaces remain below 100 degrees Farenheit while stovetop is in use</td>
<td>S. Mellott</td>
</tr>
<tr>
<td></td>
<td>Indicating when stovetop is hot</td>
<td>UI indicates hot zones of stovetop for at least 20 minutes after elements are turned off</td>
<td>S. Mellott</td>
</tr>
<tr>
<td>Sensing</td>
<td>Time to sense</td>
<td>Stovetop recognizes a pot has been placed in less than 1 second</td>
<td>L. Johnson</td>
</tr>
<tr>
<td>Can sense a pot quickly</td>
<td>Resolution of sensing for each element</td>
<td>Stovetop recognizes the fraction of each burner element covered to an accuracy of at least 25% element</td>
<td>L. Johnson</td>
</tr>
<tr>
<td>Can sense a variety of pots and pans</td>
<td>Range of pot sizes sensed</td>
<td>Stovetop can sense pots as small as one 2&quot; by 2&quot; burner element and as large as the entire stovetop surface</td>
<td>L. Johnson</td>
</tr>
<tr>
<td></td>
<td>Range of pot materials sensed</td>
<td>All metal pots can be sensed by stovetop</td>
<td>L. Johnson</td>
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<tr>
<td><strong>Industrial Design &amp; User Interface</strong></td>
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<tr>
<td>Attractive design</td>
<td>External appearance</td>
<td>Stovetop does not extend farther than 0.5” above countertop</td>
<td>S. Reed</td>
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<tr>
<td></td>
<td></td>
<td>Similar in color and shape to existing high-end kitchen appliances</td>
<td>S. Reed</td>
</tr>
<tr>
<td>Has intuitive user interface</td>
<td>Self-explanatory layout</td>
<td>UI is easily navigated by &gt;80% of tested users within targeted user group</td>
<td>S. Reed</td>
</tr>
<tr>
<td></td>
<td>Easily accessible stove functions</td>
<td>Any heating/cooking function is within 4 or less UI layers/steps</td>
<td>S. Reed</td>
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<td></td>
<td></td>
<td>1 step function to turn off entire stove</td>
<td>S. Reed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Knob is comfortable to use by 95% of tested users</td>
<td>S. Reed</td>
</tr>
<tr>
<td></td>
<td>Visibility</td>
<td>Interface screen has dimensions of at least 4” by 6”</td>
<td>J. Doyle</td>
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<tr>
<td></td>
<td></td>
<td>UI set between 3 and 17 degrees from horizontal</td>
<td>J. Doyle</td>
</tr>
<tr>
<td>Cleanable UI</td>
<td>Water resistance</td>
<td>Sufficient sealing around the LCD screen for damp sponge cleaning</td>
<td>J. Doyle</td>
</tr>
<tr>
<td>Durable UI</td>
<td>Impact resistance</td>
<td>Surface withstands an impact from 2kg mass dropped from 12”</td>
<td>J. Doyle</td>
</tr>
<tr>
<td></td>
<td>Thermal resistance</td>
<td>UI withstands temperatures up to 150 degrees Fahrenheit</td>
<td>J. Doyle</td>
</tr>
<tr>
<td></td>
<td>Scratch resistance</td>
<td>Screen material hardness greater than 70 on Rockwell Hardness M Scale</td>
<td>J. Franklin</td>
</tr>
<tr>
<td></td>
<td>Life span</td>
<td>UI remains functional for at least 10 years</td>
<td>J. Doyle</td>
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</tbody>
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