**Abstract**

A problem that is prevalent with existing electric shavers is that after shaving for a short period of time, the shaver blades can become clogged with hair thus reducing the overall quality of the shave. Additionally, hair that is not captured by the shaver is lost to the surroundings leading to unwanted untidiness. Furthermore, electric shavers notoriously do not provide shaves that are as “close” as manual razors. We contend that adding vacuum to the electric shaver gives it comparable if not superior shaving when compared to a standard electric shaver or manual razor.

- Increased hair collection
- Closer shave
- Decrease in blade clogging

**Methods & Results**

Artificial fur was used to model hair. For consistency, the hair was trimmed to a uniform length. Three distinct trials comparing hair capture with and without vacuum were conducted resulting in the data provided below. In order to obtain results as accurate as possible, each trial was conducted using the same shaving rate, same duration, and constant force/pressure applied to the shaver. The results are as follow:

<table>
<thead>
<tr>
<th>Trial</th>
<th>Hair Shaved in 1 minute Benchmark Model</th>
<th>Hair Shaved in 1 minute Vacuum design</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.147</td>
<td>0.254</td>
</tr>
<tr>
<td>2</td>
<td>0.127</td>
<td>0.218</td>
</tr>
<tr>
<td>3</td>
<td>0.137</td>
<td>0.229</td>
</tr>
<tr>
<td>4</td>
<td>0.137</td>
<td>0.234</td>
</tr>
</tbody>
</table>

**Conclusion**

It is clear from the above images and data that introducing vacuum capabilities to the shaver significantly improved the performance of the shaver when compared to the benchmark model. The closeness of shave increased significantly to produce a much smoother and cleaner shave, the blade clogging was eliminated almost completely, and hair collection was increased by over 80%.

**Acknowledgments**

- Steve Laguette
- Dave Bothman

**References**

USPTO: United States Patent Vacuum Shaver
No: 5,261,161 November 16, 1993