The dependence of the transportation industry on oil based fuels like gasoline and diesel is a major problem in today's world. Comparisons between hydrogen and gasoline cars based on total cost of ownership and carbon emissions were made to decide if a “Hydrogen Economy” was a practical alternative to the current oil economy. It was determined that hydrogen vehicles are a very practical solution to the world’s fuel needs in the years to come.

**Abstract**

- Hydrogen is reacted in a PEM (proton exchange membrane) fuel cell to produce electricity and water.
- By making the hydrogen with clean energy, it can be completely sustainable.
- When the hydrogen is stored in a compressed tank the vehicle has a range of 240 miles.

**Technology**

- Hydrogen is a viable and sustainable means to powering vehicles.
- The cost of fuel per mile of hydrogen powered cars (4-17cents/mi) is comparable to or better than gasoline powered cars (16cents/mi).
- The environmental impact from the use of these vehicles is far less than any gasoline car on the road today when clean energy sources like wind and solar are used to produce the hydrogen.
- Urban areas that depend heavily on oil for transportation or have issues with vehicle pollution can benefit the most.

**Comparison Chart**

<table>
<thead>
<tr>
<th>Hydrogen</th>
<th>Battery</th>
<th>Gasoline</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pros</strong></td>
<td><strong>Cons</strong></td>
<td><strong>Pros</strong></td>
</tr>
</tbody>
</table>

**Survey Results**

- Storing compressed hydrogen in composite tanks and reacting it in a PEM fuel cell is a viable and sustainable means to powering vehicles.
- The cost of fuel per mile of hydrogen powered cars (4-17cents/mi) is comparable to or better than gasoline powered cars (16cents/mi).
- The environmental impact from the use of these vehicles is far less than any gasoline car on the road today when clean energy sources like wind and solar are used to produce the hydrogen.
- Urban areas that depend heavily on oil for transportation or have issues with vehicle pollution can benefit the most.

**Conclusion**

- Storing compressed hydrogen in composite tanks and reacting it in a PEM fuel cell is a viable and sustainable means to powering vehicles.
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**References**

- Storing compressed hydrogen in composite tanks and reacting it in a PEM fuel cell is a viable and sustainable means to powering vehicles. [Link](http://www.sustainable-energy.com/articles/hydrogen-fuel-cells/)
- The cost of fuel per mile of hydrogen powered cars (4-17cents/mi) is comparable to or better than gasoline powered cars (16cents/mi). [Link](http://www.car-environmental.org/articles/hydrogen-fuel-cells/)
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