



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

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Project Title Does the Amount of Hydrogen Used in a Fuel Cell Affect the Amount of Electricity Produced?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My objective was to determine if the amount of hydrogen used in a fuel cell affect the amount of electricity produced.</p> <p>Methods/Materials I assembled a Proton Exchange Membrane (PEM) hydrogen fuel cell system which consisted of a fuel cell, PEM electrolyser and a solar panel. The solar panel was connected to the electrolyser in order to produce hydrogen gas. The fuel cell system is then tested for any leakage. The leakage rate is then recorded and used in calculations to detrmine the actual consumption rate. The fuel cell is test using different current levels,the amount hydrogen used was recorded and the time it took to use all the hydrogen was recorded as well. A minimum of 5 test were performed for each current and timed.</p> <p>Results The results showed that the consumption of hydrogen produced through the PEM electrolyser was proportional to time when the current remained constant and the consumption rate of hydrogen was proportional to the current produced for a constant time period.</p> <p>Conclusions/Discussion The results supoported my hypothesis. The amount of hydrogen used did not effect the amount of electricity produced. In fact the hydrogen consumed was proportional to time regardless of the level of current it was being tested. The results of each test were consistant with each other with very minimal variations. As long as hydrogen gas was made available electrical current was produced.</p>	
Summary Statement A proton exchnage membrane (PEM) hydrogen feul cell system was assembled and tested the amount of hydrogen consumption under various current drawn from the fuel cell.	
Help Received Father help with the internet research and my mother helped with some typing.	