



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

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| Name(s) Travis P. Doran | Project Number J0205 |
| Project Title Hydrogen Hotrod: Can Adding Hydrogen Increase Your Car's Fuel Efficiency? | |
| Objectives/Goals My objective in doing this project was to determine if adding Hydrogen, produced by electrolysis, can positively affect a vehicle's fuel efficiency. | |
| Abstract Methods/Materials Determine design for Hydrogen generator. Locate, purchase parts, assemble generator. Fill the generator reservoir with distilled water and catalyst. Install the generator. Record MPG on 2 tanks of gas WITHOUT generator. Record MPG on 2 tanks of gas WITH generator. Alternate subsequent tanks of gas with AND without the generator to assist in qualifying results. Calculate MPG for EACH tank of gas, then compare. Glass Ball jar. Plastic canning lid. Drip line elbows, bubbler. Aquarium pressure check valves. Plexiglas tower. Stainless steel positive and negative wires. 4 inch tube with plastic wall anchor. Wing nuts, bolts, washers. Waterproof plumbers goop. Baking soda. Distilled water. Red and black insulated wire, connectors. ¼ inch clear tubing. Relay. In-line fuse holder. 2006 Toyota Corolla. | |
| Results G=gallons of gasoline used. MD=miles driven. MPG=miles per gallon Without using the Hydrogen generator Test 1 # 11.048G, 357MD = 32.31MPG. Test 2 # 6.825G, 202.8MD = 29.71MPG Test 3 # 9.325G, 269.3MD = 28.88MPG. Test 4 # 11.667G, 367.6MD = 31.51MPG With using the Hydrogen generator Test 1 # 3.762G, 129MD = 34.29MPG. Test 2 # 4.931G, 165.5MD = 33.56MPG Test 3 # 9.967G, 336.9MD = 33.80MPG. Test 4 # 9.574G, 330.6MD = 34.53MPG Test 5 # 10.772G, 356.9MD = 33.13MPG. Test 6 # 10.719G, 359.4MD = 33.53MPG Test 7 # 8.681G, 285.6MD = 32.90MPG Please see Method and Journal for details on alternating the use of the generator between tests. | |
| Conclusions/Discussion My hypothesis was correct. Fuel efficiency was improved by 2.83 MPG. This is a 9.20% increase. My dad drives an average of 18,000 miles yearly consuming approximately 585 gallons of gasoline. Using the Hydrogen generator would save him 54 gallons of gasoline per year. With the current average price of gasoline at \$4.10 per gallon, this would equal a savings of \$221.40 annually. | |
| Summary Statement Using electrolysis, my Hydrogen generator will positively affect the fuel efficiency of a vehicle. | |
| Help Received My dad monitored every step of the generator building and installation process. My mom assisted me in arranging the content of my project board and journal. | |