



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

<b>Name(s)</b> <b>Ezra B. Creighton</b>	<b>Project Number</b> <b>J0209</b>
<b>Project Title</b> <b>Can I Make an Engine Run More Fuel-Efficient by Introducing Oxyhydrogen to the Air-Fuel Mixture?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> I am doing this project to see if I can make an engine run more fuel-efficient with the addition of oxyhydrogen (Browns gas) to the air/fuel mixture. This project could lead to future money and fuel saving and have emissions more friendly to the environment.</p> <p><b>Methods/Materials</b> I started my testing with a four-stroke Robin engine, I removed the air filter and fully leaned the fuel screw on the carburetor. I put a 1/4 in. tube from my oxyhydrogen source into the carburetor. I did not turn the source on for the control tests only the oxyhydrogen variable tests. For the oxyhydrogen variable tests I turned on the source to provide oxyhydrogen at a rate of 1.3 liters per minute. I put gasoline in the engine and started the engine to let it warm up for approx. 15 min. While the engine was running, I put 50 cc of gasoline into the engine and started a stopwatch. I waited for the engine to die because it ran out of gasoline, and then I stopped the stopwatch and recorded the run time. I alternated the control and oxyhydrogen tests to keep the possibility of outside variables (engine problems, temperatures, etc.) to a minimum.</p> <p><b>Results</b> After I completed several tests, both the control and oxyhydrogen variable, the average of the control run time was 79.8 seconds and the oxyhydrogen variable had an average of 85.6 seconds. This is a 5.8 second difference. Thus, by adding oxyhydrogen, the engine ran 7.3% longer with a much smoother idle. The addition of oxyhydrogen caused the engines RPMs to stabilize and run more efficiently.</p> <p><b>Conclusions/Discussion</b> My tests show that when I introduce oxyhydrogen to the air/fuel mixture it makes the engine run longer. The engine was more fuel-efficient with the oxyhydrogen. When I leaned the fuel, it took away some of the gasoline the engine needed to run smooth. When I introduced oxyhydrogen to the engine, the oxyhydrogen replaced the deficiency so the engine ran smoother. My hypothesis was correct. The engine ran 7.3% longer with oxyhydrogen and with a much smoother idle. If the world could achieve similar results with oxyhydrogen on automobiles or other machinery, we would save money on fuel! Using oxyhydrogen not only makes the engine run more fuel-efficient, it also helps the environment. Oxyhydrogen turns back into water (H<sub>2</sub>O) when it goes out the exhaust, the water replaces a little of the bad exhaust gases that would have been there if the oxyhydrogen had not replaced it.</p>	
<b>Summary Statement</b> This project proves that a four stroke, 10 horsepower engine can be more fuel-efficient with the addition of oxyhydrogen to the air and fuel mixture.	
<b>Help Received</b> My brother-in-law and my dad supplied the materials and helped me with this project . My mom helped me get library books.	