

# **SHEC Labs achieved breakthrough performance in manufacturing hydrogen from water using the sun's power**

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Solar Hydrogen Energy Corporation (SHEC Labs) reported that they have demonstrated the production of Hydrogen from water using their proprietary Solar Thermal Chemical Process. The Hydrogen production was accomplished at the APS (Arizona Public Service) Solar Test and Research Facility in Tempe, Arizona on June 8th and again June 28th, 2004. Utilizing the hot Arizona sun and a new Solar Concentrator developed by the Lab, the research team was able to extract Hydrogen from water at a temperature of 850 degrees Celsius (1562° Fahrenheit).

Tom Beck, Founder and President of SHEC-Labs, commented "We are extremely pleased by the results of this test. The test run and the production numbers were right in line with our computer modeling. We believe we have achieved breakthrough performance with our ability to manufacture hydrogen from water using the sun's power." Also in attendance was Mark McWhirter, Senior Energy Engineer for The State of Arizona Department of Energy.

This successful test was the second for SHEC-Labs. In Late May of this year the team produced Hydrogen from Natural Gas using a similar technology. SHEC-Labs is planning additional tests in the next few weeks, using a variety of catalysts and temperatures.

SHEC Labs, founded in 1996, has developed technologies to more economically harness the power of the sun, reduce the temperatures

required for the disassociation of water and more economically produce hydrogen from fossil fuels. Their solar concentrators can be used for heating, thermal based air conditioning, electrical power generation, hydrogen production, and other applications.

SHEC is developing Thermo Chemical and Solar Electric Hydrogen Processes to extract hydrogen from water using the sun's energy. This has the potential for becoming an economical method for the commercial scale production of clean renewable hydrogen. The process relies on a thermal-catalytic cycle which requires heat as an input. Instead of burning fossil fuels to create the necessary process heat (and generating greenhouse gases in the process), SHEC labs intends to employ the heat of the sun by using mirrors to focus sunlight onto a chemical reactor.

Independent engineering companies have verified that SHEC labs' process can produce hydrogen from water at temperatures significantly lower than 1000 degrees Celsius. Direct thermal water splitting in comparison normally requires temperatures of 2000 degrees Celsius to begin the reaction and 5000 degrees Celsius to optimize the reaction.

"The United States, Japan, Canada, and France have investigated thermal water splitting, a radically different approach to creating hydrogen. This process uses heat of up to 5,430°F (3,000°C) to split water molecules" 1. The SHEC labs catalytic process, on the other hand, has operated as low as 400 degrees Celsius. Their process dramatically reduces radiant energy losses and the material problems associated with higher temperatures are minimized. Their 18 inch diameter solar concentrator has been able to achieve temperatures in excess of 750 degrees Celsius. SHEC Labs has also developed advanced "high ratio" solar concentrators capable of concentrating the power of the sun by 5,000 times.

SHEC labs' defines as it's mission: To provide the world with an

inexhaustible source of clean, renewable energy and like its predecessor, 'The Industrial Revolution', to usher in 'The energy revolution' by harvesting the sun's energy to produce an economically viable source of hydrogen and other energy sources."

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