

Key hydrogen report now available on OpenEnergyInfo wiki site

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As part of the Open Government initiative launched by the Obama Administration, Sandia National Laboratories' Technical Reference on Hydrogen Compatibility of Materials has made its debut on the Energy Dataset of OpenEnergyInfo, or OpenEI.

Many in the industry working to increase the [competitiveness](#) of clean hydrogen-powered fuel cell electric vehicles (FCEVs) already consult the reference guide, which has been available on Sandia's web page for several years. But, now, the information found in the publication is more widely available and easier to access.

"The Technical Reference is a [valuable tool](#) for the hydrogen delivery and storage industries," said Sunita Satyapal, director of the Fuel Cell Technologies Office, the [Department of Energy](#) (DOE) office that has sponsored Sandia's work on the Technical Reference. "It can help eliminate R&D redundancies by providing extensive compatibility data to the broader industry. By sharing these crucial findings on OpenEI, the Technical Reference can increase the rate of progress towards overcoming the barriers of hydrogen delivery and storage and allow us to reach full commercialization of FCEVs sooner."

The Technical Reference focuses on compatibility issues between hydrogen and other materials. Due to their small size, hydrogen molecules can seep into materials at room temperature. This high rate of diffusion can promote embrittlement in some of those materials and some materials can be downselected depending on the application and

conditions.

To help overcome this challenge, the Technical Reference provides detailed information of the effects of hydrogen on the materials that might be used in equipment for storing hydrogen and delivering it to [fuel cell](#) electric vehicles. Developed and updated by researchers at Sandia, the Technical Reference consolidates results of extensive review of reports and journal publications, as well as new research conducted by Sandia, on a range of compatibility issues that must be addressed to increase the cost-effectiveness and ease-of-use of hydrogen vehicles and their infrastructure.

Browsing the reference reveals the extent and depth of detail available. Concentrating on relatively low-cost and high-strength [materials](#)—including a variety of steel, aluminum, copper, and nickel alloys, as well as non-metal polymers—the report provides data on potential high priority impacts of hydrogen on such material properties as yield and tensile strengths, fracture toughness, and fatigue crack growth rates.

"The reviewed and tested data in the Technical Reference can help industry target and develop components and systems with fewer hydrogen compatibility issues," said Sandia researcher Brian Somerday, who, along with Sandia colleague Chris San Marchi was a principal developer of the report. "This could potentially accelerate the timetable for the [hydrogen](#)-fueled transportation system."

More information: en.openei.org/wiki/Main_Page

Provided by Sandia National Laboratories

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