



Search Our Archives
Keywords:
Order by: date relevance
Find
More options

Get ad with e sig

Text s

Welcome

- Home page
About this site
Awards, reviews
Privacy policy

News

- Summaries
Headlines
Topics

Shop

- Our stuff
Browse books
Magazines
Software

Contribute

- Register free
Post release
Edit profile
Review hits

Advertise

- Media kit
Traffic stats
Contact us

Order now and save. crucial TECHNOLOGY A Division of Micron www.crucial.com FREE SHIPPING!

Previous Story | Related Stories | Next Story

Source: University Of Illinois At Urbana-Champaign
Date: 2003-03-20

Synergistic Supergrid Could Meet Nation's Energy Needs In 21st Century

CHAMPAIGN, Ill. -- A high-capacity superconducting energy pipeline, or SuperGrid, could deliver electricity and hydrogen fuel across the nation and help meet future energy needs while reducing the consumption of fossil fuels, say experts who recently assessed the scientific feasibility of the idea.

Two years ago, the idea of a continental SuperGrid was proposed by Chauncey Starr, founder and president emeritus of the Electric Power Research Institute. To investigate the technical feasibility of the concept, the University of Illinois at Urbana-Champaign, with support from the Richard Lounsbery Foundation, sponsored a "National Energy SuperGrid Workshop." The workshop, held Nov. 6-8, 2002, in Palo Alto, Calif., brought together scientists and engineers from eight universities and three national laboratories as well as leading power and industry consultants.

The recently published workshop report may be found on the Web at http://www.energy.ece.uiuc.edu/SuperGridReportFinal.pdf .

"We found no showstoppers to the proposed SuperGrid concept," said workshop organizer Thomas Overbye, a professor of electrical and computer engineering at Illinois. "By delivering both electrical power and hydrogen fuel, the SuperGrid could help eliminate transmission bottlenecks, improve system reliability and meet growing energy demands well into the 21st century."

The SuperGrid would supplement the existing high-voltage electric power grid with a buried pipeline containing low-temperature superconducting cables for power transmission and liquid hydrogen as the coolant. By linking urban centers to remote nuclear, coal-fired and renewable power sources -- transferring large amounts of electricity and supplying hydrogen as an alternative fuel -- the SuperGrid could help the nation move away from the



Jump to



Disc Disney New \$

Popu Time41

Natio Geoc Mage Nation:

Scier Amer Scienti

Popu Mech Hearst

Arch: Archae

Natio Geoc Adve Nation: (Price Priv

increasingly problematic carbon-based fuels.

The SuperGrid concept goes beyond the current vision of a future hydrogen economy, to one where electricity and hydrogen become synergistic elements in an integrated energy infrastructure, said Overbye, a power transmission expert. Hydrogen could be produced at the SuperGrid's power plants by electrolysis, and then transmitted through the energy pipeline to urban centers. Alternatively, hydrogen could be produced and stored in urban centers from excess electricity transmitted through the superconducting cables.

"The ability to convert large amounts of electrical energy into easily stored hydrogen fuel would make for a much more flexible electric demand," Overbye said. "This would make it much easier to match electric supply to demand, allowing electric transmission networks to more closely mimic the commodity characteristics of oil and gas delivery systems. Conversion to hydrogen-based energy storage would also enhance the role of intermittent power sources such as solar energy and wind energy."

Placing the energy pipeline underground would reduce surface congestion and rights-of-way disputes in crowded urban centers, Overbye said, and could reduce the SuperGrid's vulnerability to severe weather, sabotage and terrorist attack.

While the workshop participants determined that no new scientific breakthroughs are needed to construct the SuperGrid, major technological innovations will be required to minimize environmental effects and maximize economic and societal benefits. As an initial step, an integrated systems engineering experiment with hydrogen as a combined cryogen and form of energy transport should be undertaken, the report recommends. Following that, a pilot-scale program with a pipeline more than a kilometer long should be undertaken.

Note: *This story has been adapted from a news release issued for journalists and other members of the public. If you wish to quote any part of this story, please credit **University Of Illinois At Urbana-Champaign** as the original source. You may also wish to include the following link in any citation:*

<http://www.sciencedaily.com/releases/2003/03/030320073732.htm>

Copyright © 1995-2002 ScienceDaily Magazine | Email: editor@scienceda