

Hydrogen becomes more viable alternative fuel

By Timothy J. Hammons
Staff Writer

Imagine a world where Australia is only a two-hour flight away from here, where the "greenhouse effect" is no longer a concern and where there is an abundant amount of fuel for automobiles.

With the use of hydrogen as a fuel, these ideas may not be so far in the future, said William B. Craven, manager of Texas A&M's Center for Electrochemical Systems and Hydrogen Research.

The center, a department of the Texas Engineering Experiment Station, is recognized as the leading institute in the United States in hydrogen research.

"We can take hydrogen and use it anywhere that hydrocarbons, gasoline and diesel fuels are used," Craven said.

He said hydrogen could be used by everyone because it comes from water.

"If you run out of water, you don't worry about fuel," he said.

A problem with hydrogen, however, is that it usually stays in the form of water, he said.

The center seeks to break hydrogen away from the oxygen in water with sunlight, through a process called water electrolysis.

Electrolysis uses solar cells to generate electricity, through which the water is passed.

Electricity breaks up molecules and gives off oxygen that can be contained or allowed to dissipate. The hydrogen is contained and used to create electricity or used in an internal combustion engine.

Craven said that hydrogen makes a better fuel than hydrocarbons.

When hydrogen is burned in an engine, the hydrogen recombines with oxygen from the air and creates heat, which provides energy, he said.

With gasoline, the output of the exhaust is carbon monoxide and carbon dioxide, which pollutes the atmosphere.

With hydrogen, the problem of pollution does not exist, he said.

If the world were to stop using fossil fuels today, he said, it would take 20 years to stop the warming effects that pollution already has caused.

Because the hydrogen for fuel comes from water, it is available to every country that has the technology to collect it.

"The beauty of hydrogen is no one can monopolize it," he said. "There are probably 30 countries in the world that are working on hydrogen research."

"They realize the value, that no one

country will be able to dominate the process.

"The only reason we're not using it today is crude oil is cheap," Craven said. "It is a lot cheaper to drill a hole in the ground and get an enormous amount of energy out of it."

The cost for the hydrogen conversion is equated to about \$3.50 per gallon of gasoline, he said.

Craven said that West Germany has legislated that the country will use hydrogen as its major source of energy by the turn of the century.

Both BMW and Mercedes Benz have developed hydrogen test cars, and Mercedes will have a hydrogen car in production next year.

Soviet Union recently flew an aircraft using hydrogen, he said.

United States did the same 20 years ago.

Aerospace plane proposed by the U.S. military is fueled with hydrogen.

The plane takes off and lands as a normal plane, he said, but it will be capable of going into the upper atmosphere.

Hydrogen burns so quickly and fast that it is the only fuel that can be used to fly faster than Mach 7, he said.

Aerospace plane will fly at Mach 17 to Mach 22, which is about 11,000 mph to 14,000 mph.

Flying at such speeds, a flight from California to Japan would take 30 minutes, Craven said. It now takes about 10 hours.

Another application of hydrogen is in the use of a fuel cell, which converts hydrogen into electricity, he said.

Fuel cell would allow on-the-spot generation of electricity, he said.

The center would like to place nuclear power plants in remote areas, where the electricity needed to produce hydrogen would be produced.

Hydrogen then would be piped into a city, where it could be used with the fuel cell to produce electricity.

Craven said a problem with using long power cables is the loss of power over long distances.

However, very little hydrogen is lost in pipelines.

Conservationists denounce Bush for nature policy

AUSTIN (AP) — Republican presidential candidate George Bush personally led an effort that has resulted in poisonous chemicals making their way into Texas waterways, according to a report released Tuesday by two conservationist groups.

Brigid Shea, elections and program coordinator for Texas Clean Water Action, said, "It is inconceivable to anyone in the environmental community that George Bush considers himself an environmentalist."

"I know of no environmental organization that has endorsed George Bush or praises his record."

Ken Kramer, legislative director of the Texas Sierra Club, said his organization nationally — with almost 500,000 members — had not made an endorsement in the presidential election, but it has left no doubt as to who has a superior environmental record.

Because of that, Kramer said, he was strongly endorsing the Democratic ticket of Michael Dukakis and Lloyd Bentsen.

Texas Land Commissioner Garry Mauro, a Democrat, said Bush is nothing more than a campaign conservationist. Calling Bush an envi-

ronmental is like calling (GOP vice presidential candidate) Dan Quayle a Phi Beta Kappa, Mauro said.

Rep. Lena Guerrero, D-Austin, joined in support of the national Democratic candidates at a news conference to release the report criticizing Bush's environmental record. It was prepared by Clean Water Action and the Sierra Club.

A summary said Bush, as chairman of the Task Force on Regulatory Relief, had led the effort to block or weaken federal laws protecting air, land and water, and suspended water pollution control laws designed to prevent thousands of tons of such toxic metals as cadmium, zinc and chromium from entering waterways.

The national task force was a vehicle which allowed some of the nation's largest polluters to rescind, delay or obstruct environmental laws designed to protect the population.

Mark Sanders of the Bush campaign in Texas said in response if there is any doubt that Dukakis — not Bush — is an "anti-environmentalist, they ought to go look at Boston Harbor," in Dukakis' home state of Massachusetts.

Presidential ballots impounded because of misleading printing

AUSTIN (AP) — The secretary of state ordered paper ballots in Hidalgo County impounded Tuesday, charging they were printed in such a way as to make voters think they could cast a separate vote for Democrat Lloyd Bentsen as vice president.

"It is incredible for me to believe that this was an oversight or a typographical error," Assistant Secretary of State Randy Erben said. "If it is deliberate, there's no place in the process for election officials to act in such an illegally partisan manner."

Hidalgo County Clerk William "Billy" Leo was in a meeting and not immediately available to comment, his secretary said.

According to Erben, paper ballots printed for the upcoming general election correctly placed one check-off

box next to the presidential tickets of the Republican, Libertarian and New Alliance parties.

But for the Democratic ticket of Michael Dukakis and Bentsen, a box was printed next to each name.

Erben said he believes the ballot was printed that way to make voters think they could vote for Bush as president and Bentsen, a three-term Texas senator, as vice president.

Marking both would invalidate the presidential portion of the ballot, he said.

State election law calls for a single vote to be cast for a party's president-vice president ticket.

"It appears we have a deliberate conspiracy to deprive voters of their civil rights," Erben charged at a news conference.

Bentsen also is listed on the ballot as a candidate for re-election to the Senate. That is allowed under the state's "Lyndon law" that permits dual candidacies.

Erben said Secretary of State Jack Rains' office ordered Leo to impound the Hidalgo County paper ballots. Both those ballots already voted absentee and those still blank.

Leo was ordered to print new paper ballots and to send corrected ballots to those who requested absentee mail-in ballots.

The Texas Department of Public Safety and FBI were asked to investigate, Erben said, and ballots in all 253 other counties would be checked to make certain the same thing hadn't happened there.

Slum area tries to obtain clean water

EL PASO (AP) — People working to bring water to rural slums east of El Paso hope they bypassed a federal bureaucratic roadblock by sending an environmental assessment directly to the interior secretary.

Assessment was delivered Monday to Interior Secretary Donald Hodel, Dale Jones, president of the El Paso County Lower Valley Water District Authority, said.

Water authority is trying to bring clean running water and sewerage service to "colonias" — poverty-stricken housing subdivisions in east El Paso County's

Lower Valley where about 28,000 people live without treated running water.

Authority plans to convert Rio Grande irrigation water for household use. But the U.S. Bureau of Reclamation — an agency of the interior department — said this summer that the authority would have to submit a detailed environmental impact statement because of the plan to change the use of the river water.

An impact statement could take up to two years to complete, delaying the delivery of water to colonias. So the authority sent a less-detailed environmental

assessment over the Bureau of Reclamation's head to Hodel.

El Paso Mayor Jonathan Rogers, U.S. Rep. Ronald Coleman and both U.S. senators from Texas have asked Hodel to meet with Lower Valley residents.

Jones said he hopes Hodel will approve the water authority's plan to bring water to about 9,000 colonia residents in the next three years.

The assessment, completed a week ago by the Rio Grande Council of Gov-

ernments, shows that bringing water to the colonias would improve human health and welfare without adversely affecting the environment in the short term.

Some colonia residents drink water from wells they sink in their yards, but most of those wells have been shown to be contaminated with sewage from out-houses and septic tanks.

Many colonia residents have to go to churches and houses in communities with water, fill plastic jugs with water and tote them back.

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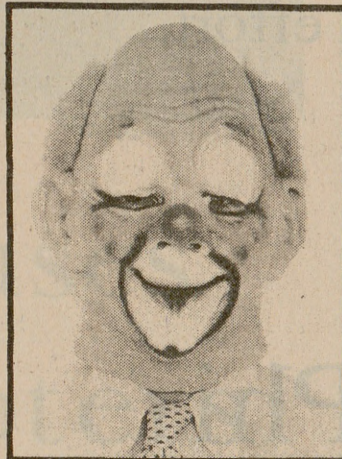
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- The College Station Community Center
1300 Jersey St.
across from TAMU campus
- The Brazos County Courthouse
on Texas Avenue in Bryan
between 26th and 25th streets

Open 8am to 5pm

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