

Proton Power^{INC.}

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East Tenn. company Proton Power aims to build 'chip engines' for making hydrogen

By Bob Fowler

Posted July 20, 2012 at 4 a.m.

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Business partners and developers Dan Hensley, left, and Sam Weaver, check out plans for Proton Power Inc., soon to begin making "chip engines" for converting biomass into cheap hydrogen power.

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KINGSTON — The polished concrete floors in Proton Power Inc.'s new manufacturing facility are bare now, but the cutting-edge energy company is on the cusp of a ramp-up that could revolutionize cheap, clean power.



It's the latest endeavor by longtime business partners and friends Sam Weaver and Dan L. Hensley, West Knox County entrepreneurs with a knack for manufacturing.

Proton Power builds "chip engines" to make cheap hydrogen gas to power engines and generate electricity using biomass ranging from all manner of plant material to junk mail to garbage.

"This particular technology is much more than it appears," said Ted Wampler Jr., president of Wampler's Farm Sausage Co. of Lenoir City and Proton Power's first customer. "There's actually a vision for the future of the planet in what these guys have developed."

"It's a game-changer for us, but it's also a planet-changer."

The 23,000-square-foot building is in Roane Regional Business and Technology Park, and various sizes of chip engines will be assembled there.

That building is close to the entrepreneurs' nerve center — a converted 1804 farmhouse now "chock full," Weaver said, of 25 employees immersed in research and development, engineering and marketing.

The former speculative building where chip engines will be made is getting readied, and actual production should be under way in the next month or two, he said.

The company is now in three locations — a site off Lexington Drive in Knoxville, a fabrication shop in Kingston and a storage facility in Maryville. The Maryville and Knoxville locations will be moved to the Roane County park.



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Longtime business partners Sam Weaver, left, and Dan Hensley stand outside Proton Power Inc., where special "chip engines" that will convert all sorts of organic matter into cheap hydrogen gas will soon be made.

While warning that he "doesn't want to get expectations ahead of where we are," the potential market for the innovative chip engines is huge, Weaver said.

"If we get all the sales that we are expecting, we might scale up to 100 people," he said of prospective employees in the new site.

"If we do enough sales to fill out that building, we would have several hundred people."

"We couldn't be happier about Sam Weaver's Proton Power moving into manufacturing at Roane Regional," said Leslie Henderson, president and CEO of the Roane Alliance, the county's economic development entity.

"Proton Power's cutting-edge technology could well become a major player in the alternative energy field," she said.

Weaver and Hensley have launched, developed and sold several companies over the course of their 40-year partnership and friendship.

Now they're focusing almost exclusively on Proton Power. Huge bids on different projects that would use different sizes of chip engines — more than \$1 billion worth of them — are now out on the market.

"We work on a worldwide basis," Weaver said.

How the chip engines convert biomass to hydrogen — called Cellulose to Hydrogen Power, or CHyP — is proprietary, Weaver said.

But it does it more efficiently and cheaply than other processes for creating synthetic hydrogen.

Typical systems for making the universe's lightest, most plentiful element only produce about 15 percent hydrogen, said Weaver. "Our process produces at about 65 percent," he said.



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BOB FOWLER/NEWS SENTINEL Sam Weaver, left, and Dan Hensley, longtime business partners, are about to begin production of "chip engines" in the new headquarters for Proton Power Inc. in the Roane Regional Business and Technology Park.

The byproducts are water and what's called biochar. "It's carbon," Wampler explained. "But instead of putting carbon into the air, which people are calling greenhouse gas emissions, this is called carbon sequestration."

He added, "It's an unbelievable soil amendment that can increase crop yield by 70 to 200 percent."

Chip engines can be meshed with natural gas generators, with fuel cells and with all types of internal combustion engines for power and heat generation.

It's particularly useful on islands, said Weaver, where electricity produced by generators is now extremely expensive.

"The advantage of our technology is you don't have to store hydrogen or distribute it," he said. "You can create it on demand, and that's a huge advantage."

At the sausage plant, Wampler said he'll be getting switchgrass from Genera Energy LLC in Vonore to feed the chip engines, and his gas generators have been modified to run on hydrogen. Startup is planned in December.

Combined with solar panels, he said, "that takes us off the grid, and we'll be carbon-negative. It proves you can be sustainable and run a business and be profitable while doing so."

"The world needs a lot of energy," Weaver said, "and this is sustainable technology that will fill that gap. It's the only technology I know that would supply the world with its energy needs."

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