

“The idea that you can create a pressure build-up in water that can be used to turn a normal hydro turbine is not new. We felt it was time to get out of the laboratory and to build a prototype to demonstrate that the osmotic-pressure idea will work”

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Statkraft head of Innovation Bjorn Holsen on the company's progress to generate osmotic power from mixing fresh and salt water



Powering up

China's Longyuan aims for \$2.2bn IPO Page 3

Getting power

Chile's Marcelo Tokman to get ministry Page 22

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New thrust for turbine territory



Go-ahead for 800MW Alta-Oak Creek Mojave project will boost wind-rich area of California, and provide a contract for GE's new 2.5MW turbine Page 4



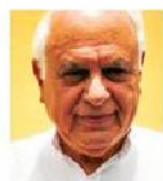
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Dream climate job in Brussels is offered to Connie Hedegaard Page 5



WIND

Improved offer from Guy Hands' Infinis is rejected by UK's Novera Page 12



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India's ambitious development plan throws down the gauntlet to China Page 19

US Start-up venture

Brothers kick up a stink

Non-farmers set up pioneering firm generating electricity from cattle manure and food waste

BENJAMIN ROMANO
SEATTLE

Farmers have typically built agricultural-waste digesters to solve environmental problems created by large manure lagoons. The electricity they generate is a secondary benefit.

Daryl and Kevin Maas are turning that equation around, basing a stand-alone energy company on a series of small-scale digesters, the first of which was recently inaugurated in Washington state. It is probably the first privately owned, multi-farm digester in the US.

The Maas brothers are not farmers themselves, but they grew up among the small dairies of the Skagit Valley, north of Seattle.

The brothers knew that farmers were interested in anaerobic digesters that capture methane from cow manure and food waste. This methane can be used to fuel an engine to generate electricity, while the leftover solids make odourless mulch or bedding material.

"Most farmers just do not have the time or the money to do that kind of project and take time out of their farms," Daryl Maas, 31, tells *Recharge*. The brothers saw an opportunity for a third party to be 'the missing link'.

The economics did not work out until energy prices started climbing in 2007.

"That is when we really thought it might make a business," he says. They founded Farm Power Northwest that year.

However, the support of utility Puget Sound Energy (PSE) was critical.

"Really, what makes or breaks these projects is the co-operation of the utilities," Maas says. "You can have a beautiful location and all kinds of beautiful stuff, and even some great grants, but if the utility will not play ball, it will not happen."

PSE introduced a standard power-purchase contract for small energy project developers. The brothers signed a 10-year deal with a rate of about \$0.08



'BEAUTIFUL STUFF': Liquids from the end of the digester process are poured back into the holding tank and will later be used on fields

per kilowatt hour, which they believe will make their digester profitable.

On the strength of that contract and a federal guarantee, Farm Power was able to get a loan for the project without offering a large parcel of land as additional collateral, he says.

Farm Power's digester handles waste from cows at nearby Beaver Marsh Farms and Harmony Dairy. It is designed to handle the waste from about 1,500 dairy cows, as well as food waste, totaling nearly 190,000 litres a day.

The digester manufacturer is GHD, one of a handful of companies serving the US market,

while manufacturing-solutions contractor Andgar built the project.

With support from other Washington digester operators and lawmakers — including

“You can have a beautiful location and all kinds of beautiful stuff, and even some great grants, but if the utility will not play ball, it will not happen”

DARYL MAAS

Governor Christine Gregoire — the Maas brothers successfully changed a state law that prevented food waste from going into a digester.

This was a critical change. In rough ratios, food waste from a chicken processor, seafood company, and local vegetable and fruit processors represents 10% of the total volume Farm Power expects to put through the digester. But this high-energy waste produces a third to a half of the power.

Farm Power can also charge a cash 'tipping fee' for disposing of the companies' waste, which would otherwise go to a landfill.

The digester is expected to

avoid the equivalent of 6,000 tonnes of carbon dioxide emissions each year.

The \$3.5m project has benefited from two \$500,000 grants from the Washington state legislature and the US Department of Agriculture.

Farm Power has applied for three more grants to help build other digesters around western Washington.

Maas says the brothers have big plans to build even more around the Pacific Northwest, all of about 750 kilowatts each.

"We are looking at Oregon," he says. "We are all over the place. We can dream."

US Cellulosic ethanol

KL Energy says Swiss deal will allow completion of first commercial-scale plant

RICHARD A KESSLER
FORT WORTH

KL Energy has reached a long-term off-take agreement for cellulosic ethanol with Fair Energy, a biofuels and petroleum trading firm in Geneva, Switzerland.

Details of the deal were not disclosed, but KL Energy chief executive Steve Corcoran says: "The commitment by Fair Energy will allow our company to complete its goal of being the first firm in North America to produce cellulosic ethanol on

a constant, commercial scale."

Corcoran adds that KL Energy will have its commercial-scale demonstration cellulosic-ethanol plant in Upton, Wyoming, operating on a 24-hour production schedule late this year.

The plant, operated by its

subsidiary Western Biomass Energy, uses Ponderosa Pine wood chips and waste from the Black Hills region as feedstock. This wood would probably be burned if it were not shipped to the plant.

KL says its ethanol will be sold for blending with gasoline and

diesel as an octane enhancer, and as fuel oxygenate to meet federal fuel-blending standards. The plant, developed with the South Dakota School of Mines & Technology, will reportedly produce up to five million gallons (19 million litres) of ethanol a year.