

INSIGHTS ABOUT GASTECHNO®

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northern LIFESTYLE



Energy entrepreneur Walt Breidenstein, along with top United States Chemical Engineer and Charlevoix resident Nathan Palwak and leading Russian nuclear scientist Igor Vankhanko, are putting forward a new technology to reduce rising fuel costs with the GasTechno lab that will convert greenhouse gases into methanol.

FUEL FOR THOUGHT

New process to convert methane 'could change the world'

By Rick Coates

Remember the days when gasoline was 99 cents a gallon? It seems like a distant memory (actually it was during the Clinton years when gas was last under a buck) and it is unlikely that filling up for less than a dollar a gallon will ever happen again (most of us would welcome less than three dollars). But if you spend a day with Walloon Lake resident Walt Breidenstein, who has enjoyed 20-plus years as an entrepreneur in the oil and gas industry on international stage, he will convince you that it might be a reality.

Breidenstein, through his company Gas Technologies LLC, is on the cutting edge of the big buzz in the energy world: gas-to-liquids (GTL). His Walloon Lake-based company has developed the GasTechno, a state-of-the-art process that is both cost- and energy-efficient in reforming methane and ethane into liquid oxygenate products.

Currently methane is used as a fuel additive in gasoline and other energy sources in the United States. However 95% of the methane used in the United States is being imported and Breidenstein hopes to change that trend. But first he has to battle the negative reputation of producing methane and the major lobbying efforts of the corporate farms and the big three automakers who have prevented the development of methane as a viable fuel source for automobiles.

CHOOSE METHANOL

"We use methane, but we just do not produce it," said Breidenstein. "China

weighed the difference between ethanol and methanol as a fuel source and chose methanol. Their primary reason is that much of the ethanol is made from food sources, and the Chinese have made a policy decision that food should be used for people. And since methanol is not from food sources, they have invested heavily into developing methanol plants. There are now methanol pumps at the gas stations in China."

To understand why the United States has been slow to respond to this power source, one must first understand the politics and the potential cost-savings to the consumer right now if the United States were to convert to a methanol-based fuel source for operating their vehicles.

"Right now, according to the Methane Institute (based in Houston), it costs \$1.58 a gallon to produce methanol, based on the current technology," said Nathan Palwak, the chemical engineer for Gas Technologies who played a major role in developing the GasTechno process. "Now, methane has less fuel value than gasoline, so it would cost about \$2.25 a gallon to operate a car on methane. Now cars would need somewhere between \$100 and \$200 in parts to be able to operate on methane."

Breidenstein likes to point out that the \$2.25 is based on the old technology, and his GasTechno process will produce methane for about two-thirds the current costs. So does that mean that there is a possibility of fueling automobiles for less than a dollar a gallon? And if so, why is this not happening?

"Basically there are two reasons why we are behind other countries in the pro-

duction of methanol," said Breidenstein. "One of the major corporate farming companies lobbied California to ban MTBE (one of the fuel additives developed from methanol), and of course these companies have their own initiative, and that is ethanol production as it is a by-product of corn. The reason has been the cost associated with the old technology, but our new process, which is a single step versus the old two-step process, is very cost-efficient."

INTERNATIONAL CAREER

At 43, Breidenstein has been an international player in the oil and gas world for several years. He has more than 14 years experience in international project finance, real estate development, and energy consulting.

In addition to his Gas Technologies company, Breidenstein is involved in groundbreaking software development for the film industry, and managing the design and development of an energy-efficient, new urbanism-style residential housing community in Northern Michigan.

Breidenstein has traveled extensively through more than 25 countries in North and Central America, Asia, the former Soviet Union and Europe, often as the guest of government leaders. In 1994 he began his international career by structuring an oil and gas processing agreement between the Petrobrazi Refinery in Romania, and Neste, the Finnish National Oil Company. He later developed a successful venture of trading food and commodity products between Russia and Europe in exchange for petroleum, and other

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He has been a lifelong resident of Northern Michigan, earning an associates degree in petroleum technology from Northwestern Michigan College and a bachelors in business administration from Ferris State. While at Ferris State, he co-founded the Ferris Association of Collegiate Entrepreneurs and served as its first president.

NO HEADWAY

Breidenstein is very committed to developing his new methane process here in Michigan, in particular Northern Michigan, but currently is frustrated with lack of enthusiasm and support from the State. Despite a call from Governor Granholm for Michigan to become the leader in alternative energy, Breidenstein has seen politics get in the way of several worthwhile projects including his own from moving forward.

"There is this fund through the Michigan Economic Development Corporation through the Granholm Initiative to make funds available for seed projects. Now, the gentleman who oversees that program met with us in Petoskey and reviewed it, and while he was fascinated with it, said it did not meet the criteria of a seed project and that his board would never approve it," said Breidenstein. "Well, I went online and checked and noticed that all of the projects that he approved for funding were in his backyard of Ann Arbor."

As for the validity of the process developed by Breidenstein's company, he points to the United States Patent Office.

"Patent laws are very strict and any patent approved has to go under a test that someone skilled in the art can recreate your invention and make it work, and then you get a 20 year monopoly," said Breidenstein. "Just this past July we were approved for a major patent that covers the process we developed. This patent was filed in March of 2007 and it typically takes three or more years to get approval, but the Patent Office saw the validity and the importance of our patent and expedited granting it to us. So this was probably some sort of record - receiving a patent just 15 months after submitting the application."

RUSSIAN SCIENTIST

Experts have also lined up in support of the GasTechno process.

"It is important to note that in each step of the process when we were developing this technology, we sought third party critics," said Nathan Pawlak. "We hired some of the leading consultants and experts to review our process and I worked with some of the top Russian scientists to develop this process."

While he was not a part of the original patent, top Russian nuclear scientist Igor Ivankhenko has been brought in to make GasTechno even more cost efficient. Ivankhenko is one of the most respected nuclear scientists in the world. He developed the state-of-the-art cancer detection device and for several years worked for NASA, developing a heat exchange system for the space shuttle program.

"GasTechno has the ability to change the world, just from the simple fact of making fuel cost efficient," said Ivankhenko. "Many countries are now looking at methanol as a major fuel source, not just an additive to gasoline. So the potential here with this technology has the chance to really make a difference."

ENVIRONMENTAL BENEFITS

Breidenstein and Pawlak point out that their GasTechno lab has the opportunity to make a difference from an environmental standpoint as well.

"What GasTechno has the capability of doing is creating methanol from wasted



Northwestern Michigan College petroleum technology alumnus and Walloon Lake resident Walt Breidenstein is on the cutting edge of the new gas-to-liquids (GTL) technology industry that is changing the face of the world's fuel supply.

gas," said Pawlak. "The gas from oil well flares, gas from the dairy and pig farms and gas from landfills is wasted gas that emits greenhouse gasses into the atmosphere, contributing to the global warming issue. Because of the low cost of our technology, we can go after these wasted gasses that others are overlooking."

Breidenstein agrees.

"So when you look at all of these wasted gasses that are having a negative impact on our environment, we see a real opportunity with our technology," said Breidenstein. "With GasTechno, because it is cost-efficient, we are able to set this

up at farms, landfills and oil wells and capture these gasses and convert them into methanol."

While on paper it all sounds good, Breidenstein continues to struggle to get interest in his process from American investors.

"It is funny, but the Chinese and other countries have flown to Northern Michigan to see this process but I can't get American investors up here," said Breidenstein. "I was told by the Methanol Institute that as long as the Big Three turn their back on methanol, it is going to be a challenge to get my technology here in the United States to be used."

Despite this, Breidenstein remains committed. He has invested more than \$400,000 of his own money in developing GasTechno and now has brought in Ivankhenko to help make the process even more cost-efficient. For Breidenstein, he likes the synergy of Russian and American perspectives.

"What I have noticed is that when you combine the Russian scientific process with the modern American engineering process, you create something special," said Breidenstein. "That is what we have done here with Gastechno - is taken the brilliance of Russian science and combined it with the brilliance of American engineering."

The functioning prototype of GasTechno was built in Kalkaska at Hague Manufacturing.

So what is the next step for Breidenstein?

"We are looking at making this even more cost-efficient. In addition, we plan to attract investors, those that want to be a part of something that is on the brink of revolutionizing the fuel industry," said Breidenstein.

For additional information on the GasTechno process and Breidenstein's company Gas Technologies LLC, visit gastechno.com