



AGGIE ENGINEERS TURN GAS INTO LIQUID

Researchers partner with Energy Company to commercialize technology

By HOLLY HUFFMAN
Eagle Staff Writer

Like many innovations, Texas A&M University professor Ken Hall said he stumbled upon the process that converts natural gas into liquid fuel purely by accident.

Hall and fellow researchers were trying to develop a process that would clean up waste lube oil. But someone else managed to do it first -- and more economically.

The team wasn't sure what to do with their work. Until, that is, a fellow researcher suggested they might be able to use the process to turn natural gas into ethylene, said Hall, who holds the Jack E. and Frances Brown chair in chemical engineering.

"Once you have ethylene, you can do almost anything," Hall said, explaining that the natural gas then can be converted into fuel that powers jets, diesel trucks and even standard automobiles.

Texas A&M has partnered with Synfuels International to commercialize the technology, and after almost a decade worth of work, university and company officials are ready to bring the process to the public.

Synfuels, which recently unveiled a \$30 million demonstration plant in Bryan, is developing small, portable plants that easily can be set up in remote locations, where most of the world's natural gas is stranded.

Company President Tom Rolfe said the facilities can be used to convert natural gas directly into fuel for the area in which the plant is located. Liquid pipelines -- easier to build than gas pipelines -- also can be set up to pipe the fuel to another location.

The plants also can be set up next to existing oil rigs to capture and use the natural gas that normally escapes into the atmosphere as part of the drilling process, Rolfe said.

"I think Texas A&M chemical engineers saw they could change the world with this technology developed in their labs," Rolfe said, explaining that natural gas contains less sulfur, a major pollutant, than oil when it comes out of the ground.

"If you can clean up the massive amount of flared gas and you can fuel the world economies locally instead of having a massive infrastructure, you're doing really well."

Rolfe said the plants have a 20- to 25-year life span and come with a price tag upward of \$70 million, with some larger facilities costing up to \$350 million. The company estimates there is enough world demand for about 1,000 plants, which are expected to pay for themselves within five years, he said.

The process developed by the A&M researchers is not the first to convert natural gas into liquid fuel, said Hall, who also serves as associate director for the Texas Engineering Experiment Station. The new process replaces the Fischer-Tropsch method, which was developed in Germany in the 1920s.

The Germans used the process throughout World War II, Hall said. But it's not economical, and the process can only be conducted in large, commercial-size units that can't feasibly be located in small, remote locations where much of the world's natural gas is trapped -- far from established networks of pipelines, he said.

Hall said the new process is much less expensive and the plants are less than half the size of the older facilities, which is why they can be set up in remote locations.

"The current estimate is there is maybe five quadrillion standard cubic feet of natural gas in remote locations. It may be much bigger, because nobody has gone out in the past and looked for natural gas," Hall said. "Now, instead of having to worry about getting rid of natural gas, you can actually use it and make a profit from it."