

Green System Said Answer to Shale Water Woes

One of the key ingredients to making shale plays such as the Haynesville and the Marcellus work is water — lots of water.

Water use, essential to the hydraulic fracturing process, is also a rapidly developing political issue as states move to both develop their shale formations and protect their water resources.

But HBC Systems — a joint venture between Hydration Technology Innovations (HTI) and Bear Creek Services (BCS) — says it has developed the technology needed to satisfy the politicians, the greens and the E&P industry.

Called the Bear Creek Green Machine, its developers describe it as the first energy efficient system for recycling the millions of gallons of fresh water used daily in the E&P process, cutting down the amount of fresh water needed at a drilling site and the number of trucks needed to haul fresh water in and wastewater out.

HTI Chief Executive Walt Schultz told *Natural Gas Week* that the system uses HTI's forward osmosis membrane technology in a cost-effective, portable and scalable wastewater reclamation system.

The forward osmosis process uses a concentrated salt solution that is typically found at a well site, as it is combined with fresh water in the creation of completion fluid used in the hydraulic fracturing process.

"It is better for both operators and the environment," he said. "It eliminates the costly transport and disposal of contaminated reserve pit water while simultaneously reducing the need for gas drillers to source and transport additional fresh water to the well site."

BCS President Nathan Hutchings told *NGW* that in its initial tests last year, the Green Machine was used to reclaim reserve pit water left behind after the drilling process. Based on the success of that testing, the new JV is poised to break out nationally, he said.

"We are very pleased with what we are seeing in the industry right now. Operators are receptive to green technologies such as ours that are economical," Hutchings said. "We have been getting very positive feedback from the operators and the regulators."

The mobile units process wastewater at rates in excess of 100 gallons per minute. Right now, two machines are fully operational and five more are under construction, Hutchings said. But given the size of the developing gas drilling market and scope of water challenges, there could soon be hundreds of Green Machines in operation, Schultz added.

"It is the most eco-friendly water reclamation system available," Schultz added. "Not only do the units operate with a carbon footprint that is less than any competing technologies, they also eliminate the high carbon footprint of drill water disposal and transportation."

In a presentation that would have made E&P representatives, politicians and environmentalists happy, Schultz said the system is recycling 20% of the water that is needed for a well. This means 20% less fresh water is needed from local sources and the reclaimed water can be reused at the well.

He added that for a single Haynesville well, this would eliminate 150 round trips by tanker trucks to the well site — lowering diesel consumption and reducing the wear and tear on parish and county roads.

"Taking this many trucks off the road, especially in the rural areas where these wells are, is a big item for parish government," Schultz said. "It means less money the parish has to spend repairing roads that could be damaged by high volumes of heavy vehicles."

Hutchings said the JV moves its machines, which are housed in 53-foot trailers, to the drill sites and they are manned by its operators until the water recycling project is completed.

The first tests of the Green Machine showed it could reclaim more than 125,000 gallons of reserve pit wastewater using about 20 gallons of diesel to fuel the power generator, Hutchings said. In addition, it was found that reclaiming about 1 million gallons of water, or one full reserve pit, would eliminate having to transport about 150 truckloads of wastewater to a disposal well.

"We believe we have hit a sweet spot," Schultz said. "It's almost a perfect storm for us — the plays are developing, people are looking for a technology that is both economical and eco-friendly and it uses readily available technology. That's us. And so far, we haven't found anyone who doesn't like what we are doing."

The JV is looking at initially deploying units in the Fayetteville, Eagleford and Marcellus shales, they said.

"The timing," Hutchings said, "is just about perfect."

John A. Sullivan, Houston

