



Technology Showcase

September 21, 2016 – 2:15pm – 5:15pm
Philadelphia, PA

Sponsored by Ben Franklin Shale Gas Innovation and Commercialization Center



Introduction

Bill Hall, Director – Ben Franklin Shale Gas Innovation and Commercialization Center

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Opening Comments

Denise Brinley, Special Assistant to the Secretary – Strategic Industry Initiatives, PA Department of Community & Economic Development (PA DCED)

Keynote Address

David Ross, Vice President for Innovation, EQT Corp.

Presenter Information:

AllStar Ecology

Killing trees to create snags and putting up small, randomly placed bat houses do not meet the USFWS criteria for project approval. AllStar Ecology uses a landscape habitat model to predict the highest likelihood of bat presence, then “clusters” bat boxes in these locations to mimic forest conditions. The company’s Bat Conservation International (BCI)-certified two-chamber rocket boxes have an inner chamber to replicate conditions within a tree’s cavity, and outer chambers that provide conditions similar to sloughing bark. The four-sided boxes allow bats to move between chambers to find temperature conditions favorable for maternity colonies. Rocket boxes simulate natural gaps in the forest resulting from windfall or insect outbreak, where Indiana and Northern long-eared bats are known to roost and forage.

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Alphabet Energy

The Power Generating Combustor (PGC) uses solid-state thermoelectrics to generate electricity from high-grade heat and as a result, can convert most combustion processes into power generation devices. The PGC replaces traditional flares, combustors, vapor destruction units and other incinerators at both existing and new sites. Alphabet Energy and combustion expert Coyote North have partnered to deliver this simple and reliable power generator that also meets Quad - O requirements.

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Capstone Distributor, E-Finity Distributed Generation

The Capstone microturbine is a perfect fit for an environmentally conscience oil and gas provider. It uses no oil or lubrication of any kind, instead utilizing a patented air-bearing system in place of a conventional oil-lubricated engine bearing. The turbine is air lubricated and air cooled, which removes the need for any kind of spill containment around generators.

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Choice Completion Systems

The Choice Razorback is a 100 percent drillable composite plug that has a large flow-through ID that aids in the circulation of the frac ball, and gives an unobstructed pathway for flow-back. Razorback plugs have approximately one-fifth the total material volume of a standard composite plug, and can reduce total drill-up debris by as much as 85 percent. Over a 35- plug completion, this reduction can eliminate approximately 55 gallons of debris that must be removed from the wellbore.

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Epiphany Solar Water Systems

Epiphany's E5H system is a hybrid-powered, produced water remediation solution that is able to remediate water above 250,000 ppm to below 100 ppm. The technology is powered by concentrated solar power and natural gas, and works by heating a transfer fluid that is pumped through a heat exchanger, transferring heat to input water and causing it to boil under pressure. The pressure is released inside a crystallizing chamber and the contaminants in the water drop out, leaving pure steam that is compressed and pushed through heat exchangers that further heat the input water. The steam exits the system as pure distillate, and the contaminant solution is deposited into a hopper to be reused by the driller or taken to a landfill. The pure distillate is pumped to Epiphany's evaporation unit, the ERM3000.

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Gas Recovery Partners, LLC

The Aurora Eco- System (patents pending) is a commercially proven, scalable and mobile/re-deployable technology that produces clean, dry, noncorrosive compressed air to drive onsite equipment/instruments at gas wells, such as glycol pumps, controllers, valves, switches and plunger lifts, eliminating the use of produced gas which must be vented into the atmosphere or



flared. Aurora Eco- System units include a proprietary rotary screw compressor powered by an emissions- free solar and/or wind power generation system, plus a battery pack for power storage, allowing 24/7 operation. Units are remotely monitored via satellite/cellular networks. The entire system can be installed in one day without any special hook- ups/infrastructure because it uses existing onsite piping. No power grid connection or permits are required.

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LANXESS Corp

With lower biocide concentrations and higher efficacy as well as longer stability, LANXESS' advancement in molecular treatment provides savings in treatment cost, environmental advantages and higher recycling water efficiency. It is already used in other industrial applications and is EPA-registered. LANXESS is fully equipped to provide regulatory and logistic support.

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PQ Corporation

Ecodrill® S45 is a novel form of aqueous sodium silicate. Conventional sodium silicate consists of small, highly charged silicate molecules in an aqueous solution. PQ Corporation has developed an economic production method that produces much larger and more reactive silicate molecules. The change in molecular structure provides for more controllable set times with the final product having higher strength and greater dimensional stability.

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RIMA Services

Optical gas imaging cameras from FLIR can visualize and pinpoint gas leaks that are invisible to the naked eye. With an optical gas imaging camera, it is easy to continuously scan installations that are in remote areas or in zones that are difficult to access. The Sky Eye UAV is designed to take advantage of the FLIR G300a camera's unique capabilities. In only a matter of minutes, RIMA can mount the camera while the machine is prepared with the right connectors for power, video and data connectivity.

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Sensor Networks, Inc.

On- stream monitoring of assets such as pipes, tanks, and pressure vessels can help determine the integrity of an asset. SNI offers an installed ultrasonic sensor system capable of monitoring metal loss due to corrosion, erosion or cracking. The signal and the data are communicated via cellular network, therefore eliminating the need to repeatedly send technicians to the job site—the result is much higher quality and higher integrity data at substantially lower operating costs, with fewer safety risks.

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Shale Mountain Resources

The SMR in situ gamma spectroscopy process allows for rapid analysis of Naturally Occurring Radioactive Material (NORM) and Technologically Enhanced Naturally Occurring Radioactive Material (TENORM). Waste samples are analyzed in 10 minutes instead of the 21 days required by the traditional EPA Method 901.1M. Gamma-emitting radionuclide concentration is reported in pCi/g. This technology can be used in a laboratory setting or can easily be deployed to the field to support environmental remediation, waste characterization and/or drilling operations.

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Closing Remarks

Kathryn Klaber, Managing Partner - The Klaber Group

