Shale Gas Innovation Contest

Water Storage and Distribution

May 12, 2015

Hilton Garden Inn
Southpointe, PA
Purpose

• Provides bulk liquid storage on site
• Reduce transportation cost and permits
• Eliminates unsightly and hazardous pits
• Eliminates risk of waterfowl and wildlife mortality related to pits
• Eliminates risk of damaging underground pipelines and utilities
Various service liquids can be stored and transferred from one central location to service multiple surrounding well sites.

Risk of dangerous vapors will not accumulate as the tank continuously adjust itself to whatever volume of liquid is in storage.

50% better heat retention than steel.

Water can be cleaned on site and put right back into tanks.

Flexible hose line system can cover miles of terrain, eliminating need for water transfer trucks.
**Hose Reel System**
- 2 Reel Bases
- 2 Power Units
- 11 Reels with Lay Flat Hose
- 2,400 FT of 6” Lay Flat Hose Per Reel = 5 miles
- One Remote Control
- Ancillary Equipment
- Can transfer 450,000 to 671,000 GPD
- Can be installed at a rate of 13.5 Miles Per Day

**Tank Farm**
- Plug and Play System connect as many tanks together as needed
- Each Tank has eight inlet/outlet ports
- Manifold system can be placed as needed to distribute liquid to specific tanks as required
- Tank fabric is tested to 73,000 cycles and is designed to handle all weather conditions from -58°F to +161 °F
- Typical life span is five to seven years dependent on weather and chemicals
- Field tested to more than 200 moves without weld separation
- Can be patched on site with minimal leakage
Maneuverability

• One semi-truck can transport several tanks to setup site with a combined storage capacity of over 1 million gallons

• Small crew can set-up or knock down a million gallon system in one day
Commercialization Status

- Multiple manufacturers throughout US and Canada
- FMW will design a system suitable for each customer’s needs utilizing off the shelf items and sub-systems
- Timeline is immediate—driven only by design and delivery of readily available COTS items

- $196,480.00 per 210,000 gallon tank unit
- $45,350.00 per 50,000 gallon tank unit
- $206.00 per day per tank not including fuel and DOT Fee’s
Examples/comparisons of Competing Technology

5 X 210,000 Gallon tanks = 1 Million Gallons  
3,000 lbs. per tank empty

20 X 50,000 Gallon tanks = 1 Million gallons  
1,279 lbs. per tank empty

48 Fixed axle steel tanks = 1 Million gallons  
29,950 lbs. per tank empty
Key Partners

• **NGInnovations, Inc.**
  Commonly known as NGI, it was established in Feb. 2006 having assembled an experienced management team with a proven track record. Working closely with industry and regulators, NGI has demonstrated and provided water quality solutions, keeping efficiency and cost constantly in mind.

• NGI’s current product line includes the NGPure™ Recovery System, the NGPure™ Separation System, the NGPure™ MRU System and the NGPure™ C-FIT System. The technology included in each of these systems is engineered to specifically deal with issues clients encountered in dealing with cleaning up water of varying quality.

• You may obtain additional information by going to:
  – web page: [www.nginnovations.com](http://www.nginnovations.com) or going to our Facebook page at: [nginnovations.com](http://nginnovations.com)

• **Orange Construction Corporation**- On site engineering to prep site and construction of containment berms as needed
Current Projects

GROUND EXPEDIENT REFUELING SYSTEM (GERS)
Ten years of battle proven capability around the globe, with continuous testing and improvements for a variety of customers with unique, demanding requirements
FMW Rubber Products, Inc.

- First established in 1994 in partnership with Teledyne/General Dynamics to manufacture fuel systems for M-1 Abrams tank
- Entered composite work with NASA and became recognized leader in Titanium Metal Matrix Composite materials
- Designed and built first all-composite flight critical subsystem for the Shuttle program (will go to Smithsonian)
- More than $100M in grants from USAF, USN, USMC, US Army and NASA since 2000
- Representative companies as sub-contractors to FMW include: Boeing, GE Aviation, Pratt, Rolls Royce, Honeywell, Raytheon
- FMW has manufactured aircraft structures, turbine engine components, warheads, and drilling components for Haliburton
- Awarded multi-year grant from USAF for three concurrent national defense critical technologies—SiC fiber, TMC and ETi (Titanium powder, Ti composites and enhanced Titanium)
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