

# Neptune

FS Global

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## Water Remediation Technology Overview

## Company Status & Key Initiatives

- ▶ Fisk Engineering Services (FES) was formed to hold certain assets and operating business units within single member LLC's.
- ▶ After launching the business during the 2<sup>nd</sup> quarter of 2015, FES provided self funding for technology development and operations.
  - ▶ Inventor & developer, Brian Fisk, has been developing this technology for nearly 20 years.
- ▶ Fisk Environmental Technology LLC retains the intellectual property assets of the company.
- ▶ The following overview provides a perspective on or current efforts and results since our initial business launch.

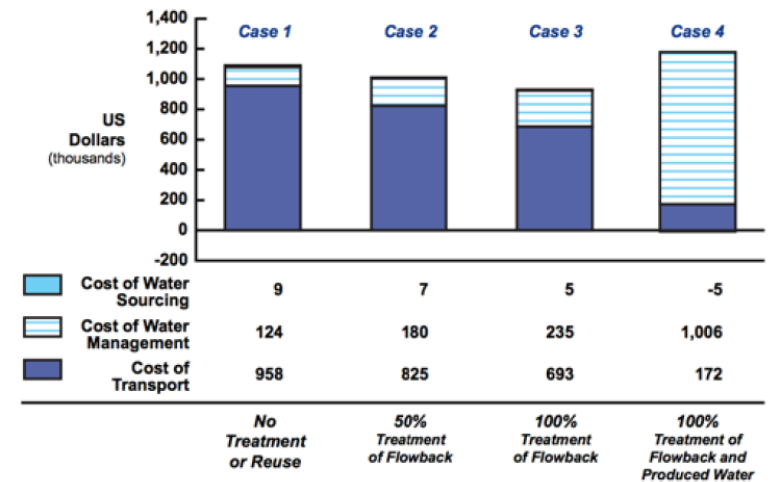
## How Neptune Addresses the Market

- ▶ Neptune FS Global has created an environmentally friendly and efficient water remediation system, the Fisk Neptune Processor.
- ▶ We are a Nashville, TN based company with focus on the oil and gas business, mining and geothermal sectors.
- ▶ Neptune FS Global develops and commercializes key technologies for water reclamation projects in the oil & gas industry, mining services and industrial pollution.

# Economic Impact of Disposal & Treatment

- Oil and gas producers are all coming under significant political and regulatory scrutiny for traditional water waste and disposal practices.
  - Deep concerns are surfacing over environmental damage as well as public health.
  - When treatment and logistics costs are included, the actual cost for produced water ranges from \$2.50~\$11.75 per barrel.
  - This represents an approximate \$30 billion per year industry alone in the United States

**Lifetime Cost of Water Management: Hypothetical Marcellus Shale Gas Well**



Source: IHS

# Introducing the FNP

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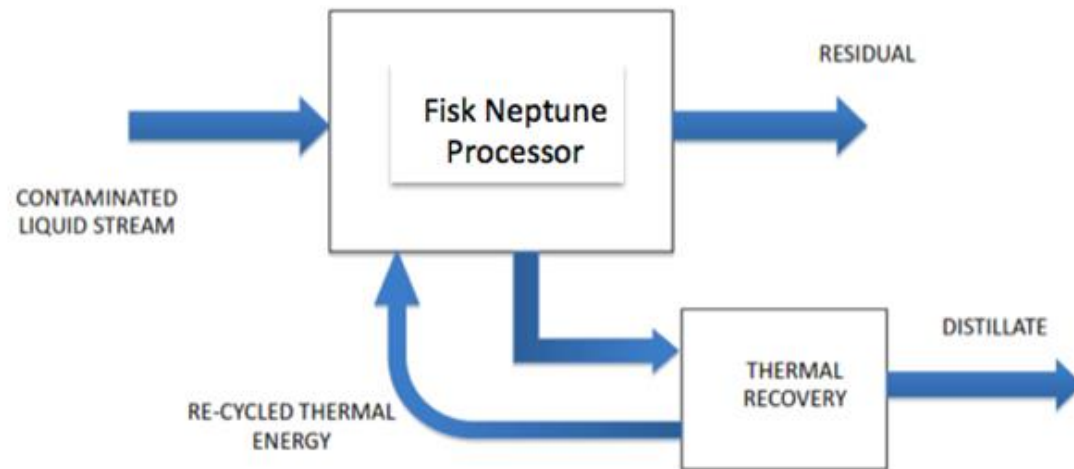


# Fisk Neptune Processor

- ▶ The Fisk Neptune Process is a standalone solution for industrial water recovery.
  - ▶ High Chlorides mixed with grease, oil, metals and other acids etc. can all be economically restored.
- ▶ The equipment is designed on a modular platform reducing downtime and minimizing in field problems.
  - ▶ Each module can be restored at our central repair location if necessary.
  - ▶ Each machine is monitored at a central location. Auto diagnosis is available to identify the source of the delay.
- ▶ Neptune FS Global systems are designed as towage trailers in 53 foot container modules to allow uniformity with today's transportation requirements.

# How It Works

- ▶ The FNP is a thermally enhanced series of stimulation, which is then processed to recover energy and enhance further processing goals increasing viability.
  - ▶ The full gamut of enhanced separation techniques is employed while combining a resource recovery process to develop viable by-products.
  - ▶ This style of processing is rare in our industry today and the thermal processor that can accomplish this is new; processes are designed for continuous flow.



# FNP Unit Design – Gen I



## Getting To The Last 25%

- Minimal on-site operations personnel required
- Low cost, simple maintenance and training
- Treats solid and liquid wastes simultaneously
- Safe and simple, minimizing exposure to hazardous materials
- Makes being green bankable
- Rapid return on investment
- Treat contaminants that other solutions cannot
- Reduce treatment costs with proven, highly efficiency thermal transfer methods
- Convert waste to energy to revenue
- Meet tougher environmental regulations, avoiding fines

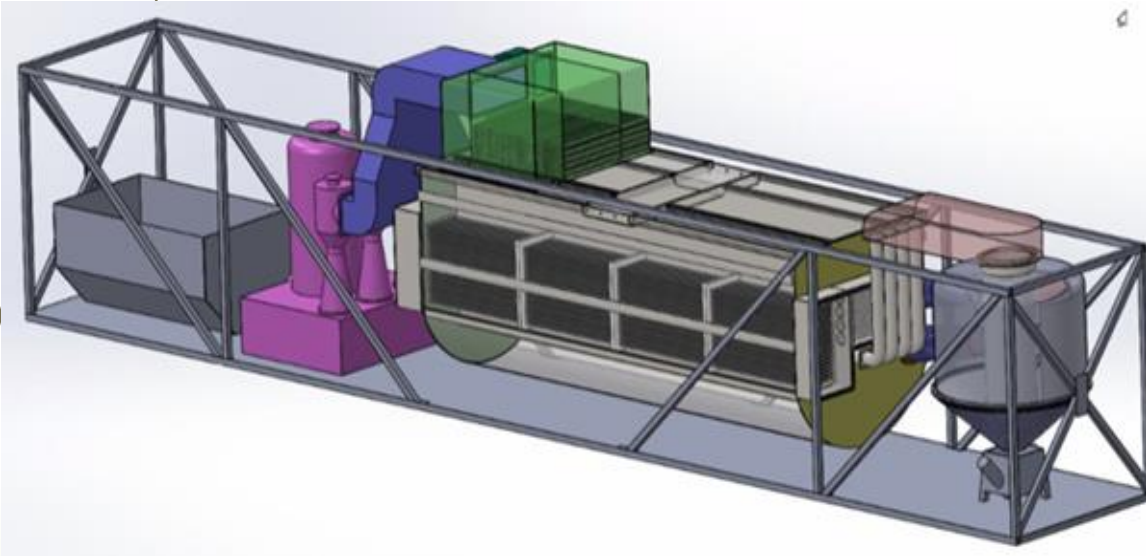
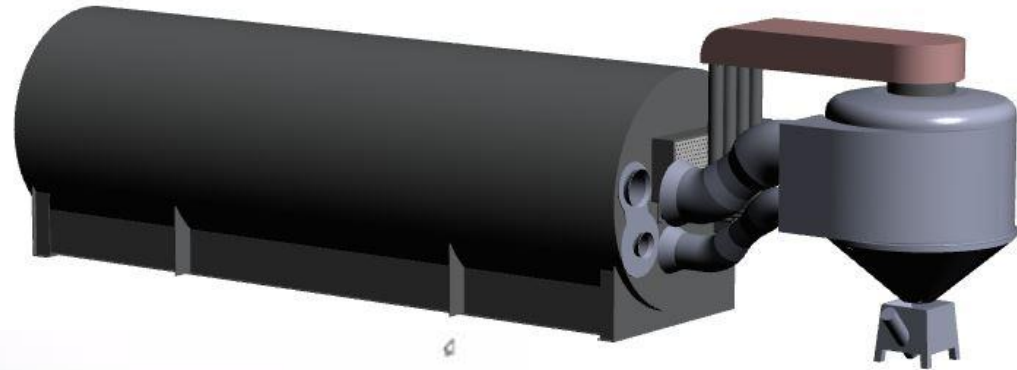


## What design elements are unique to the FNP?

- The Fisk Neptune Processor is a combination of several known process technologies applied in the overall design.
- Critical to the unit efficiencies is the burner design, the Fisk Burner, for application and use in the thermal processing of the unit.
- The Fisk Burner also allows for using flare gas from the well-head, diesel, natural gas and/or recovered hydrocarbons from the water being processed.
- The FNP unit is built within a 53-foot tube frame/skid plate and has a circumference of 96 inches.
  - The design is fully scalable; however, the current Generation IV standard configuration will process approximately 3,000 barrels per day (BPD) of water to potable or 8,000~10,000 BBD of water to pure brine, depending on turbidity of the original input.

# FNP Unit Design – Gen IV

*Gen IV standard configuration will process approximately 3,000 barrels per day (BPD) of water to potable or 8,000~10,000 BPD of water to pure brine*



## Low Cost Maintenance

- The Fisk Neptune processor is a platform based modular system. Modules are easily replaced in the field, or a complete unit can be changed in minutes minimizing down time or customer well site problems.
- The Fisk Neptune Processor is economical to operate with the Fisk Engineering Services bench system, (used to conduct testing) having shown to be effective all types of waste water presented.
- The Fisk Neptune Processor media filters provide flexibility in targeting certain types of contaminant, (metals, organic and nonorganic substances).

***Normal maintenance allows for in-field repair/replacement while resulting in a useful life exceeding fifteen years.***

# Oil & Gas Applications

- ▶ Handle waste water including emulsifications
- ▶ Remove heavy metals and other waste by-products resulting from coal/gas/oil production
- ▶ Reduce CO<sub>2</sub> emissions when used with FNP absorption processes or miscible gas injection
- ▶ Clean-up holding tanks and ponds
- ▶ Recover marketable by-products (salts, metals, water)
- ▶ Provides an alternative to disposal wells

**Allows for locating unit at the well head or disposal site and eliminates/reduces cost of transport**

**Zero Liquid Discharge (ZLD) solution through clean steam to atmosphere**



# Successful Treatment of Produced Water

- ▶ Fisk Neptune Processor has been successfully tested for breakdown of oil field produced water which further relates to oily barge ballast water, drill fluids, gas and oil pipeline entrained water and refinery process water.
- ▶ Fisk Neptune Processor pretreated waste water is subjected to hydro-cyclone vortex, skimming and biological oxidation as required for the conditioning necessary to meet wastewater discharge standards.
- ▶ Fisk Neptune Processor units are designed as portable, container modules with a minimal footprint to ease integration into existing plant layouts and are easily field deployable for batch or flow through site cleanup.

## Treated Produced Water Output

- Total Suspended Solids (TSS) reduced to 10 ppm
- Total Dissolved Solids (TDS) reduced to 20 ppm
- Barium reduced to 10 ppm
- Hydrocarbons reduced to 5 ppm
- Hydrogen Sulfide (H<sub>2</sub>S) reduced to non-detectable
- Biological material reduced to non-detectable
- Output water can be processed to potable if desired
- Zero Liquid Discharge (ZLD)



# Low Cost Producer

## BTU 1 POUND WATER RAISED 1 DEGREE

- ▶ One gallon of water equals 8.34 pounds.
- ▶ Water to steam requires sensible and latent heat to achieve liquid to vapor.
- ▶ Sensible heat is energy necessary to raise liquid water from current temperature to 212 degrees.
- ▶ Latent heat is the energy necessary to turn a liquid to a vapor at 212 degrees.
- ▶ To distill 1 gallon water 8.34 pounds requires 9358 BTUs.

## ENERGY RECOVERY PROCESSES

- ▶ Natural gas 1000 BTUs per cubic foot \$3.00 per 1000 cubic feet
- ▶ Cost per gallon without recovery process equals per barrel cost \$ 1.18 without energy recovery processes.
- ▶ This reflects a 100 % thermal transfer which this technology employs.
- ▶ The processes involved can return significant volumes of energy to the process.
  - ▶ Convective heat accounts for approximately 40% of the energy processed through the burner.

***Costs are significantly reduced where flare gas is available and/or oil recovery allows for cost offsets.***

# Environmental Impact

## ZERO LIQUID DISCHARGE

- ▶ Fisk Neptune Processor is a Zero Liquid Discharge (ZLD) solution.
- ▶ Treated water to potable can be released as clean steam, and generally will not require any special permitting.
- ▶ Recovered hydrocarbons are stored and sold to secondary markets
- ▶ Recovered material and salt is dried and available for disposal to appropriate landfills or sold to commodity markets (e.g. road salt).
- ▶ System monitors influent and effluent via remote SCADA system.

## ENVIRONMENTAL IMPACT

- ▶ Unit is mobile and can be placed near the wellhead geography thereby reducing or eliminating trucking.
- ▶ If water is taken to potable and released as steam, only solids remain thereby eliminating any need for liquid waste removal.
- ▶ Where permissible, environmental discharge is an option if treated to potable.
- ▶ Units can be used to produce clean brine and potable water for mixing operation on site for reuse in fracking.

***Eliminating ponds and/or disposal wells mitigates contingent liabilities for the producer while benefiting the environment.***

# Our Competitive Difference

- ▶ The Fisk Neptune Processor, patents pending, is unique in the industry as the unit can be tuned to water processing requirements based on the chemistry of that water.
- ▶ We believe the FNP unit's capabilities are unique and we are confident that our solution provides a better overall result.
  - ▶ Operating costs are lower with few moving parts to wear out.
  - ▶ Unit production costs are lower through standard design.
  - ▶ Production uses simplified manufacturing techniques allowing for ramp up against demand.
  - ▶ Fully mobilized platform and scalable





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## Safe Harbor Provision

This report may contain forward-looking statements that involve risks, uncertainties, and assumptions. If any such risks or uncertainties materialize or if any of the assumptions prove incorrect, the results of The Neptune Water Remediation Services could differ materially from the results expressed or implied by the forward-looking statements we make. All statements other than statements of historical fact could be deemed forward-looking statements, including: any projections of product or service availability, customer growth, earnings, revenues, or other financial items; any statements regarding strategies or plans of management for future operations; any statements concerning new, planned, or upgraded services or developments; statements about current or future economic conditions; and any statements of belief.

The risks and uncertainties referred to above include - but are not limited to - risks associated with possible fluctuations in our financial and operating results; our rate of growth; interruptions or delays in our service or our Web hosting; breaches of our security measures; the financial impact of any previous and future acquisitions; the nature of our business model; our ability to continue to release, and gain customer acceptance of, new and improved versions of our service; successful customer deployment and utilization of our existing and future services; competition; the emerging markets in which we operate; our ability to hire, retain and motivate employees and manage our growth; changes in our customer base; technological developments; regulatory developments; litigation related to intellectual property and other matters; and general developments in the economy, financial markets, and credit markets.

The Neptune Water Remediation Services Group assumes no obligation and does not intend to update these forward-looking statements, except as required by law.

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