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Cut Frac Sand Cost, Improve Your ESG Score

Contributed by **PropX**

The cost of hydraulic fracturing on a tight gas or oil well in North America is the single largest item in a well's AFE and proppant delivered is the largest single component of the fracturing invoice. PropX has developed a method to cut total delivered cost of proppant while reducing an operator's or service company's environmental impact.

This new method (patent pending) involves a system to store and deliver wet sand to the frac blender. Skipping the drying process after mined sand is washed saves significant energy and the CO_2, VOCs, Nox and silica dust emissions are reduced or eliminated.

Existing Technology – PropX worked with clients and manufacturing partners to develop this wet sand system. It's based on the successful PropX containerized delivery system, used on nearly 25% of U.S. hydraulic fracturing sites, which has enabled our clients to set new sand throughput records in multiple basins, often exceeding 10 - 13 Million #/crew/day.

Wet Sand Technology – The basic PropX platform was augmented to agitate wet sand inside the containers. This creates flow onto the conveyor which delivers wet sand to a metering conveyor belt. The metering belt bypasses traditional blender hopper augers and instead, delivers wet sand directly into the blender tub. This high-throughput system has pumped over 1 billion pounds of wet sand during the past year of field operations.

The direct delivery system digitally connects the metering conveyor to the blender control system and continuously calibrates required sand volume into the blender per unit of time, correcting for moisture content. Inputs from the frac van and blender adjust the PropX "Baby Beast" metering conveyor for seamless, automated use.

Impact on Cost of Sand Delivered – A typical frac sand mine has four operations: 1) excavating, 2) washing/sizing, 3) drying and 4) storage. Drying and vertical storage facilities are the plant's most operationally complex, expensive and labor-intensive operations. Total savings of $5- $10/ton comes primarily from variable cost savings for personnel, maintenance and energy cost.

Roughly 1/3 of plant personnel work in drying operations. Depending on burner efficiency and fuel source, $1.50 to more than $5.00 per ton can be saved just on energy to power the drying facility. In addition, 40-60% of the capital expense to build & permit a new mine lies in the drying and vertical storage facilities. This huge number can be eliminated by implementing wet sand processes. Finally, wet sand technology is ideal for novel "mobile-mini mine" concepts, offsetting prohibitively expensive utilities and air quality permits for a drying facility. Wet sand simplifies the supply chain by eliminating the drying facility, shrinks the plant and moves it closer to end users' acreage.

This innovative wet sand handling system is built upon the proven PropX containerized sand delivery process.

ESG Impact – Significant environmental benefits are realized with the use of wet sand because CO_2, NOX and VOC emissions from drying are reduced or eliminated. (Currently, around 200 tons of CO_2 is emitted per 10,000 tons of sand dried.) To put this into perspective, if all 43 million tons of sand used in the Permian Basin in 2018 had been wet sand, around 850,000 tons of CO_2 would have been eliminated, equal to removing about 300,000 cars from the road. Plus, safety is improved for all wellsite personnel. Silica dust measurements near the PropX wet sand system have registered below measurement equipment's threshold sensitivity.

Conclusion – PropX, a Denver-based last mile proppant logistics equipment provider, has developed a revolutionary system that fits today's market, meeting demand for cheaper, more efficient and more environmentally friendly frac sand delivery. PropX customers are using the containerized system in every major US tight oil or gas basin including the Permian, MidCon, Eagle Ford, Haynesville, DJ, Bakken and Utica/Marcellus. +

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