

QS Energy's AOT Crude Oil Pipeline Optimization Technology Under Consideration for High Volume Offshore Marine Terminal Facility

SANTA BARBARA, CA -- (Marketwired) -- 01/10/17 --[QS Energy, Inc.](#) (the "Company") (OTCQB: QSEP), a developer of integrated technology solutions for the energy industry, today announced that it has been asked to expand its product line by developing a high volume [AOT \(Applied Oil Technology\)](#) viscosity reduction pressure vessel called the [AOT-XL](#) to improve flow efficiency within an existing crude oil offloading marine terminal. An earlier feasibility study had concluded that to accommodate the operational flow rates of this customer, a complicated and overly expensive deluge of standard AOT units would be required, which would have surpassed the available space for installation. The solution was to design the AOT-XL, a customized system capable of handling extreme flow rates while substantially reducing the complexity of installation and footprint necessary to position the system as requested.



Greggory M. Bigger, Chief Executive Officer and Chairman of the Board, QS Energy, Inc.

This collaborative project involves a trial assessment and then full and potentially customer sponsored final engineering of the AOT-XL. This specially configured, high volume AOT system was designed upon request by the management team of a trusted, long-term collaborative partner within the midstream sector of the domestic energy industry. Intended for very high volume pipeline environments, the AOT-XL will be fabricated to meet a target of 25,000 barrels per hour capacity (600,000 bpd). Initial laboratory tests of the efficacy of AOT functionality on one of the customer's crude oil samples at [Temple University](#) has also shown favorable results. Following a series of site visits by Mr. Bigger and the QS Energy product development team, the Company is currently working towards the goal of collaboratively engineering the custom AOT-XL vessels, in conformity with strict ASME requirements, for an installation and further evaluation.

Mr. Bigger added that the opportunity to customize AOT technology for the marine tanker offloading facility was a direct result of QS Energy's involvement at the [2014 Pipeline Energy Group Conference](#), an invitation-only industry meeting held annually. Executives and engineers from many of the industry's leading crude oil producers and transporters first learned of AOT during the Company's presentation entitled, 'New Innovations in Flow Assurance for Today's Energy Renaissance.' Following preliminary discussions concerning a potential collaborative development effort, a series of meetings of both teams occurred at

QS Energy's offices, Temple University's Department of Physics, and the customer's Gulf of Mexico pipeline infrastructure, including their off-shore platform.

"This multi-year collaborative process encompassed numerous months of in-depth technical discussions, multiple meetings and several layers of communication between executives and engineers involved in the ownership, operation and continued expansion of this world-class hydrocarbon transportation hub," said Mr. Bigger.

Originally developed in partnership with scientists at Temple University in Philadelphia, Penn., AOT is the energy industry's first crude oil pipeline technology using low-wattage electrical fields to optimize the performance of midstream pipeline systems. A current installation on a high volume commercial pipeline recently provided the Company with its first SCADA (Supervisory Control and Data Acquisition) output using a standard AOT vessel. The upcoming AOT-XL was reconfigured from the latest version of the AOT and conceptualized through QS Energy's collaboration with Temple University researchers, and the Company's supply chain and manufacturing partners.

The standard AOT design is comprised of an ASME VIII 1440 psi rated vessel, measuring approximately 7 feet long by 7 feet, six inches wide by 30 feet in height and weighing 33,000 lbs. Each unit is equipped with a 36-inch ID pressure vessel and 20-inch flanges and is rated for a flow capacity of over 6,000 bbl/hr. The new AOT-XL design will use a skid that can be designed as small as approximately 9 feet long by 9 feet wide (skid designs are customized depending on customer's choice), and is 36 feet or greater in height and weighs 52,000 lbs. (excluding structural steel). The AOT-XL design includes a 60-inch OD pressure vessel with 36-inch inlet/outlet flanges and is rated for approximately 25,000 bbl/hr. of flow per unit. The skid has been reconfigured to allow tight placement of the AOT system and provides for the substantially larger individual AOT-XL to use just slightly more floor space as the standard AOT design. As with the smaller standard AOT, any number of the AOT-XL vessels can be installed in parallel to accommodate the customers flow rate.

"We are hopeful this newly designed system will have widespread applications in a variety of high volume environments that are hindered by space constraints and limited installation infrastructure," Mr. Bigger commented. "As an example, three AOT-XL vessels will provide a flow volume capacity previously requiring upwards of 20 standard AOT's which would otherwise have carried a capital cost of approximately \$20MM. In addition to the greater economic benefit to our customer through better throughput, we have reduced our installation footprint by approximately 70%. Upon determination that we are ensuring sufficient margins to protect the interests of our shareholders, we have submitted a proposal for this particular AOT-XL installation at a cost of between \$4MM to \$5MM."

Mr. Bigger added that a highly-detailed cost/benefit analysis of the AOT-XL system has been delivered to the customer for presentation at the next asset management meeting of their stakeholder companies for potential funding of the project. The meeting of this consortium, which jointly shares ownership of the offloading facility, is scheduled for late first quarter 2017.

If approved, the funding of a single standard-AOT installation in the coming months would provide for a "slipstream" unit, a mandatory and vital first phase. Among the provisions of this installation is that QS Energy will capture real-time measurement of viscosity and temperature values which will provide data necessary to the ongoing design process of a

very complicated full-scale AOT-XL deployment across the customer's marine and land-based assets.

"Having access to operational metrics gathered by our inline sensors is critical to ensuring our technology's ability to accommodate the customer's batch processing operations and to maximize the performance of the AOT-XL moving forward," Mr. Bigger stated. "We expect to analyze the movement of close to 40 hydrocarbon products during this installation, furnishing us with insight into the AOT-XL's ability to treat crude oils with a wide range of API gravity."

"As with each of our customer engagements, our objective is to play a pivotal role in creating cleaner and greater efficiencies in the movement of crude oil within the existing infrastructure of this entity," Mr. Bigger commented. "The selection of AOT technology as having the potential to streamline their operations was based on our ability to meet the unique challenges of delivering meaningful flow improvement within the space restrictions of their assets and massive flow rates. We are hopeful and believe that this will lead to the provisioning of additional custom AOT-XL units on their off-shore terminal and sea-to-shore pipelines."

For further information about QS Energy, Inc., visit www.QSEnergy.com, read our SEC filings at <https://ir.stockpr.com/qsenenergy/all-sec-filings> and subscribe to Email Alerts at <https://ir.stockpr.com/qsenenergy/email-alerts> to receive company news and shareholder updates.

Safe Harbor Statement:

Some of the statements in this release may constitute forward-looking statements under federal securities laws. Please visit the following link for our complete cautionary forward-looking statement: <http://www.qsenenergy.com/site-info/disclaimer>

About AOT™ (Applied Oil Technology)

Developed in partnership with scientists at Temple University in Philadelphia, AOT (Applied Oil Technology) is the energy industry's first crude oil pipeline flow improvement solution using an electrical charge to coalesce microscopic particles native to unrefined oil, thereby reducing viscosity. Over the past four years AOT has been rigorously prepared for commercial use with the collaboration of over 30 engineering teams at 19 independent oil production and transportation entities interested in harnessing its demonstrated efficacy to increase pipeline performance and flow, drive up committed and uncommitted toll rates for pipeline operators, and reduce pipeline operating costs. Although AOT originally attracted the attention of pipeline operators motivated to improving their takeaway capacity during an historic surge in upstream output resulting from enhanced oil recovery techniques, the technology now represents what we believe to be the premiere solution for improving the profit margins of producers and transporters during today's economically challenging period of low spot prices and supply surplus.

About QS Energy, Inc.

[QS Energy, Inc.](http://www.QSEnergy.com) (OTCQB: QSEP), provides the global energy industry with patent-protected industrial equipment designed to deliver measurable performance improvements to crude oil pipelines. Developed in partnership with leading crude oil production and transportation

entities, QS Energy's high-value solutions address the enormous capacity inadequacies of domestic and overseas pipeline infrastructures that were designed and constructed prior to the current worldwide surge in oil production. In support of our clients' commitment to the responsible sourcing of energy and environmental stewardship, QS Energy combines scientific research with inventive problem solving to provide energy efficiency 'clean tech' solutions to bring new efficiencies and lower operational costs to the upstream, midstream and gathering sectors. More information is available at: www.QSEnergy.com

Image Available:

<http://www.marketwire.com/library/MwGo/2017/1/10/11G126937/Images/GBiggar-995aa0279f779310b65263aeba6d47e2.jpg>

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