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FEBRUARY 2010

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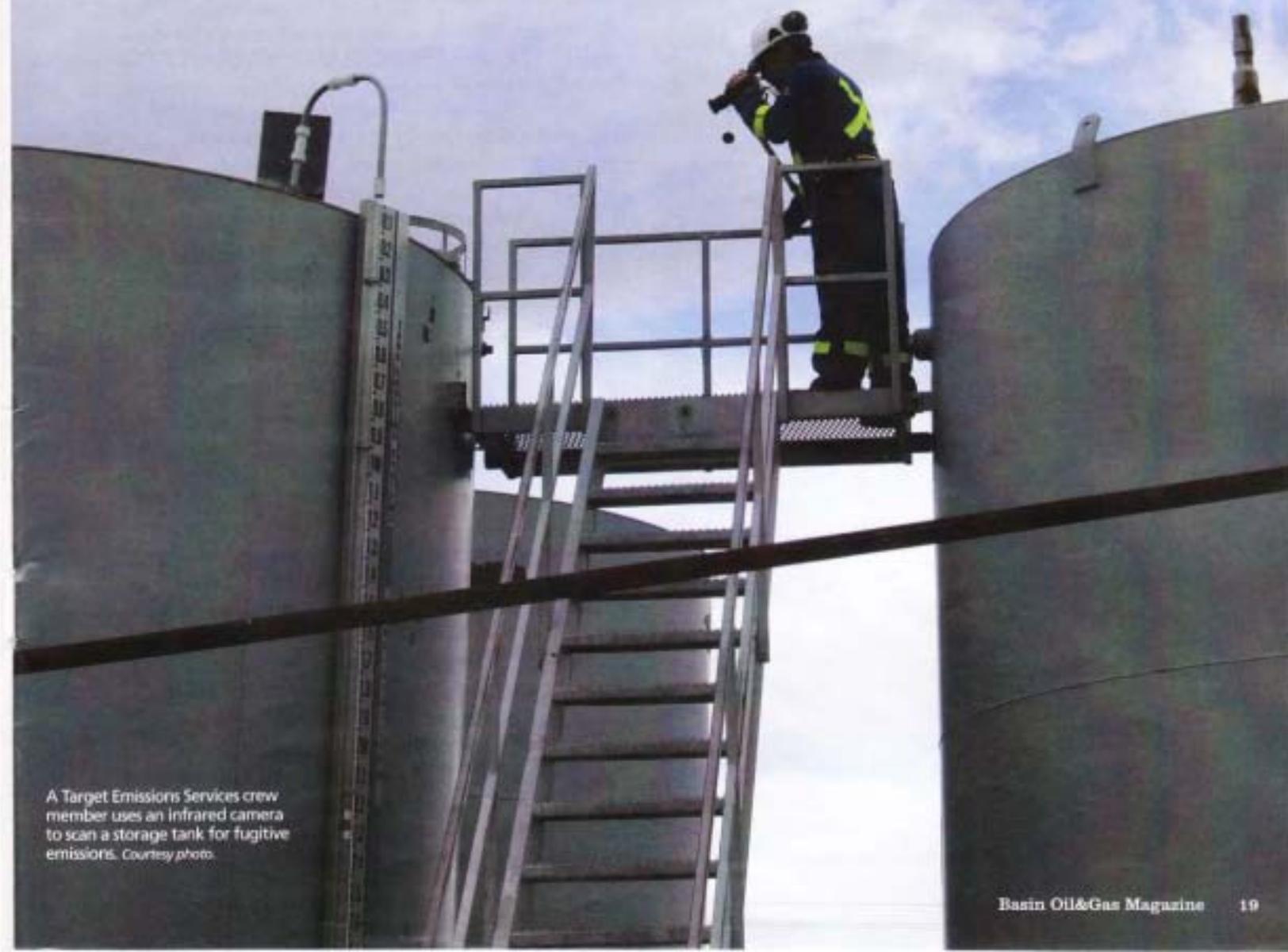
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Service companies offer help with emissions surveys, mitigation efforts



A Target Emissions Services crew member uses an infrared camera to scan a storage tank for fugitive emissions. Courtesy photo.

With the increased emphasis on finding and fixing hydrocarbon emissions in the Barnett Shale, it would seem there might be an increased market for businesses that can help identify fugitive emissions and offer mitigation solutions.

In most cases, the amount of gas recovered can show a positive net present value. We have had instances where facilities have seen hundreds of thousands of dollars of gas recovery from repairing leaks. The economics are good.

A number of companies in North America perform emissions testing and provide assistance with emissions mitigation. The Environmental Protection Agency's Gas STAR program offers an online service provider directory to help companies identify service providers (www.epa.gov/gasstar/tools/service-provider-directory.html). One of the Texas-based providers listed on that site is Hy-bon Engineering (www.hy-bon.com), which specializes in quantifying emission sources from oil and gas

facilities. The company's emission survey teams have helped several operators in the Barnett Shale to identify and quantify their vent gas streams in 2009, according to Hy-bon President and CEO Larry Richards. In 2008, Hy-bon assisted customers in capturing 8.4 billion cubic feet of previously vented methane gas in the United States.

"Our two-man teams utilize FLIR GasFinder cameras to video each source, then we use a cadre of quantification tools depending on the vent stream," Richards said. "Each team carries turbine meters, HiFlow Samplers, ultrasonic meters, calibrated bags, controlled air, and gas analysis equipment. The customer receives

a full report with a video of each source, the volume, gas analysis (if applicable) and our recommendations for economically capturing the gas. We've added an additional team for 2010, and dramatically lowered our pricing to make the service available to even the smallest customer."

Hy-bon's vapor recovery systems capture low pressure gas streams.

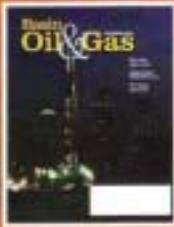
"In most instances, the company can recommend solutions for capturing the gas with less than a six month financial payback period," Richards said. "Most importantly, the vapor recovery systems are designed specifically for these typically wet, low pressure gas streams. Most companies try to handle the capture of these gas streams with standard compression equipment, and it just doesn't work. While vapor recovery systems are more sophisticated and complex than standard compressor packages, the technology in this arena has improved dramatically over the past decade. With proper design, these units consistently average over 95 percent run time in this somewhat tricky application."

Richards said he believes the natural gas industry is at a crossroads where it must ramp up efforts to reduce vent emissions.

"On one side, natural gas is the cleanest burning energy source in our country, and a perfect 25-year bridge to alternative fuels," Richards explained. "We have a great story to tell about the benefits of focusing future energy policy around natural gas. ... On the other hand, when vented to the atmosphere, natural gas is a potent greenhouse gas. The current estimate is that each ton of vented methane has 23 times the greenhouse effect of one ton of CO₂. Billions of cubic feet of natural gas are vented from storage tanks, production facilities and pipeline systems across the United States, and the technology that has emerged in the past decade to

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see and quantify these emissions suggests that actual emissions are exponentially higher than historical estimates. Most in our industry also firmly believe that it is our God given right to vent as much methane as we see fit, when we see fit – and make these decisions on a field level.

“As an industry, we can’t legitimately make both arguments,” Richards continued. “In my opinion, the venting of large quantities of methane gas is an unsustainable industry practice. Beyond that, it’s just bad business for employees, shareholders and other stakeholders. There are legitimate reasons to vent methane, and these need to be defined and explained. However, trying to defend all venting is hurting the industry’s credibility. This is a natural resource that took millions of years to create, and once vented to the atmosphere it’s gone forever. The Natural Gas STAR program focuses on technologies and best management practices that are commercially viable, and dramatically reduce methane emissions. Most of these technologies have an economic payback of less than 24 months, and are proven in the field.

“We have a window of opportunity to convince a nation that natural gas is THE bridge fuel for the next 25 years,” Richards continued. “To do so, we must make a real effort to reduce vent emissions from our oil and gas facilities. Not a token project, or a study for the summer intern – but a real effort using the correct equipment to capture the gas and put it in a pipeline. Projects that are still capturing the gas 12 months later, and a system in place to prove it to skeptics. A very real argument exists regarding what volume of gas is reasonable to vent at a location or compressor station. However, it’s incredibly hard to defend hundreds of locations across our state that are venting 20 to 250 Mcf/day near low pressure pipelines. The technology

exists to turn these low pressure gas streams into revenue, but it will take a shift in priorities in many companies to do so. The crossroads question: do we focus our efforts on defending past practices, or on positioning natural gas as the best clean energy source of this nation?”

Another service provider listed on the Natural Gas STAR site is Target Emissions Services (www.targetemissions.com), a division of Envirotech Engineering. The

company provides a range of fugitive emission management services to the oil and gas and petrochemical industries. Target specializes in the use of infrared thermal imaging to locate hydrocarbon gas leaks. The company uses the same type of infrared camera that’s used by the Texas Commission on Environmental Quality, the FLIR GasFindIR, said Terence Trefiak, a professional engineer with Target, which is based in Calgary, Alberta, Canada, but has



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Engineer Terence Trefiak of Target Emissions Services scans for fugitive emissions with a FLIR GasFindIR thermal imaging video camera. The infrared camera delivers real-time thermal images of gas leaks. *Mike Ridevaad photo.*

done some work in the Barnett Shale.

Trefiak said he expects to continue seeing increased demand for emissions testing.

"I guess the biggest driver right now in Canada and the United States are the regulation changes," Trefiak explained. "In western Canada, we've had a new requirement for the last two years where companies have to look for fugitive emissions; they must have a program in place for that. Most companies are doing an annual assessment on their larger facilities, they prioritize it based on total leak rates. In the United States, with the new Environmental Protection Agency (EPA) greenhouse gases reporting rule, there is a section specifically on oil and gas upstream fugitive emissions. The due date for compliance was 2010 and now it is due at 2011."

The final Mandatory Greenhouse Gas (GHG) Reporting Rule requires monitoring beginning in the first quarter of 2010 and first-ever GHG reporting starting on March 31, 2011, for 2010 emissions. The rule will,

for the first time, require large emitters of heat-trapping emissions to begin collecting GHG data under a new reporting system, according to the EPA. The new program will cover approximately 85 percent of the nation's GHG emissions and apply to roughly 10,000 facilities. Under the rule, suppliers of fossil fuels or industrial greenhouse gases, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to EPA. The gases covered by the proposed rule are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), sulfur hexafluoride (SF₆), and other fluorinated gases including nitrogen trifluoride (NF₃) and hydrofluorinated ethers (HFE).

"If your facility emits 25,000 tons of CO₂ equivalent per year, you must do an annual assessment," Trefiak explained. "So a large compressor station or a mid-sized gas processing plant would usually meet that

threshold. This next year a lot of companies will start doing some work for that rule. We did some work for a company in Texas that saw this regulation coming and wanted to do a test case to see what it would cost, what they might have to do to get ready. Companies may want to assess a few facilities and see what they find. A lot of these facilities never had any leak detection programs in place, so they are testing the waters to see what they find, what it will cost to fix, and to help them institute a company-wide program.

"A lot of companies see this as just another cost of business or a regulation to follow, but when they see the numbers coming from these assessments, they're seeing that there's a lot of gas to be recovered," Trefiak continued. "In most cases, the amount of gas recovered can not only cover the cost of the assessment, but actually show a positive net present value. We have had instances where facilities have seen hundreds of thousands of dollars of gas recovery from repairing leaks. The economics are good."

Doug Bartley, president of environmental and safety consulting firm B.enviroSAFE (www.beenvirosafe.com), based in Haslet, Texas, said he hasn't been bombarded with new inquiries for emissions testing yet, but he expects to see an increase in business. The company conducts audits of facilities for compliance with regulations and permit requirements and makes recommendations for short term/immediate compliance, and implements programs for long term compliance. Although the B.enviroSAFE's main business at this time is more directed at emissions testing for engines, Bartley had some general advice for the industry.

First, he recommended looking into the feasibility of vapor recovery unit (VRU) for storage tanks, although he added that this solution would most likely not be cost effective when there's only a couple of tanks on location. For a larger tank battery, it can be a win-win situation because not only does the VRU help eliminate emissions, the recovered hydrocarbons can mean additional income.

He added that compressor stations with glycol dehydrators could be a possible source of fugitive emissions.

"Glycol strips the moisture out of the gas," Bartley explained. "Chemicals might come out during this process – they flash off during this process in steam. At some point, you have to determine what your estimated emissions are out of that steam. If it exceeds a certain amount, you must put emissions controls on there to capture that steam."

Bartley speculated that hatches left open may indeed be a major source of fugitive emissions. He suggested that operators conduct internal audits to verify prudent operations. While performing pre-acquisition audits,

Bartley has observed, on numerous occasions, that hatches are left open after gauging the tanks. He also suggested that companies consider the actual amount of pressure needed to push condensate and water into storage tanks from the separator(s). Since water weighs 8.2 pounds per gallon, pressure is needed to push the water down the line and into the storage tank. Gas pressure is used to push the water into the tank and gas can flash out of the tanks after the line dumps.

"Do you really need 80 pounds of pressure to push it into the tank?" Bartley queried. "If you only need 20 and you're using 80, you may be blowing excess amounts of hydrocarbon emissions out as well. It's called flash gas. If you install a vapor recovery system and you latch the hatches, that flash gas will be put back into the gas stream and recycled after it's done its job. That in itself would be a substantial reduction in emissions and there's a payoff. Instead of blowing that gas into the atmosphere, you are using it again or selling it. Those facilities with numerous tanks or substantial condensate production should evaluate their operations for the need of a VRU. Another option for controlling tank emissions would be a flare. While this option is viable, it does not offer a payoff, as does the VRU." ★

By Pamela Percival, Editor.

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