

PARTNER UPDATE

WINTER 2010

2010 Natural Gas STAR Award Winners

The Natural Gas STAR Program recognized the following leaders at this year's Annual Implementation Workshop. Awards were based on reported methane emission reductions achieved, range of different methods to reduce methane emissions, and general involvement in the Program, as well as other innovative company initiatives to minimize methane emissions.

Production Partner of the Year

El Paso E&P

Since joining Natural Gas STAR in 2003, El Paso E&P and its parent company, the El Paso Corporation, have been active participants in the Program. El Paso E&P is one of North



El Paso E&P's Alan Gradet (*right*) with EPA Natural Gas STAR Program Representative Scott Bartos.

America's largest domestic independent natural gas producers, operating in key natural gas basins onshore in the United States and offshore in the Gulf of Mexico. El Paso E&P reports a wide variety of methane emissions reduction activities each year, including installing gas lifts, converting pneumatic devices to instrument air, installing vapor recovery units, replacing and repairing pipeline, and using foaming agents to reduce well blowdown emissions. El Paso E&P has been the top performer in the production sector for the past two years and has presented at the 2008 and 2009 Natural Gas STAR Annual Implementation Workshops.

Gathering and Processing Partner of the Year

ONEOK Partners

ONEOK Partners is a leader in gathering, processing, storing, and transporting natural gas in the United States. The company's gathering and processing segment contracts with exploration and production companies that gather and process natural gas produced in areas where ONEOK gathering systems are located. The company joined Natural Gas STAR in 2000 and won the 2008 gathering and processing Partner of



ONEOK's Jim Haught (*right*) with EPA Natural Gas STAR Program Representative Scott Bartos.

the Year award. Since joining the Program, ONEOK Partners has demonstrated a strong commitment to explore various technologies and practices for reducing methane emissions from its operations. The company has implemented 14 different technologies and practices, resulting in significant methane emissions reductions. Such activities include aerial leak detection using laser and infrared technology, replacing and repairing pipeline, and using hot taps for in-service pipeline connections.

Transmission Partner of the Year

Kinder Morgan Natural Gas Pipelines

Kinder Morgan is one of the largest natural gas transporters and storage operators in the United States, with approximately 24,000 miles of pipeline in the Rocky Mountains, the Midwest, and Texas. Over the years, the company has continually verified and updated its past data and implemented 12 different technologies and practices to reduce methane emissions. The company received the Transmission Partner of the Year award in 2006, and this year, reported methane emissions reductions through the implementation of six activities, including leak detection using ultrasound, installing electric compressors, and pipeline pumpdowns.



Kinder Morgan's Thomas Bach (*center*) and Brad Stevener (*right*) with EPA Natural Gas STAR Program Representative Scott Bartos.

Distribution Partner of the Year

New Jersey Natural Gas

New Jersey Natural Gas operates and maintains a distribution infrastructure to serve nearly half a million residential, commercial, and industrial customers. The company joined Natural Gas STAR in 2004 and has continuously explored options for reducing methane emissions from its operations. In 2009, New Jersey Natural Gas reported implementing five methane emission reduction technologies and practices and recorded its greatest level of methane emissions reductions to date. Activities implemented include converting devices from pneumatic to mechanical/electronic controls, injecting blowdown gas into low pressure systems, installing excess flow valves, and testing and repairing pressure safety valves.

Implementation Manager of the Year

Mike Pontiff, Newfield Exploration

Mike Pontiff, HSE Engineer at Newfield Exploration, has been the Implementation Manager since the company joined Natural Gas STAR. Prior to this, he was the Implementation Manager for El Paso E&P. Mr. Pontiff helped lead Newfield to join the Program and to implement a variety of methane emission reduction technologies and practices. He is a longtime champion of Natural Gas STAR's technology transfer and information sharing efforts. Mr.



Newfield Exploration's Mike Pontiff (*right*) with EPA Natural Gas STAR Program Representative Scott Bartos.



Pontiff's presentation on "Process Optimization" at the Vernal, Utah Technology Transfer Workshop and his participation at Newfield's accompanying Pleasant Valley compressor station site visit were amongst many vital contributions made in 2010. He is a valued resource in communicating the core principles of Natural Gas STAR.

Rookie of the Year

HighMount E&P

HighMount E&P plays a key role in the exploration and production of natural gas and natural gas liquids. HighMount's assets are largely located in the Permian Basin, Texas. The company operates approximately 5,800 wells in the Permian Basin region. Since joining Natural Gas STAR in 2009, HighMount E&P has implemented several methane emission reduction technologies and practices, including identifying and replacing high bleed pneumatic devices, installing flash tank separators on glycol dehydrators, installing plunger lifts, installing instrument air, eliminating unnecessary equipment and/or systems, and installing electric motors. The company's first submitted annual report also included detailed information of past methane emissions reductions.



HighMount E&P's Ervin Fisher (right) with EPA Natural Gas STAR Program Representative Scott Bartos.

International Partner of the Year

Oil and Natural Gas Corporation Ltd. (ONGC)

ONGC, a state-owned oil and gas company, is one of Asia's largest exploration and production companies, operating more than 11,000 kilometers of pipeline and contributing 77 percent of India's crude oil production and 81 percent of India's natural gas production. Since joining Natural Gas STAR International in 2007, ONGC has made significant efforts to build a strong program, focusing on engaging management, raising awareness of Natural Gas STAR within the company, providing specialized training to personnel on Natural Gas STAR-recommended technologies and practices, and building internal capacity to identify and implement methane emission reduction opportunities within ONGC operations. EPA and ONGC have collaborated on prefeasibility studies to identify and estimate major methane emission sources from several ONGC sites. Based on the results of these studies, several ONGC sites have been identified as candidates that would benefit from further emission detection and measurement



ONGC staff with EPA Natural Gas STAR Program Representatives.

studies. The company is now implementing methane mitigation projects at three locations. ONGC was also instrumental in organizing and sponsoring the 2010 Methane to Markets Partnership Expo in New Delhi, India.

CONTINUING EXCELLENCE—5 YEARS

Natural Gas STAR Partner company staff with EPA Natural Gas STAR Program Representative Carey Bylin. The 5-year Continuing Excellence Partner companies are Alliance Pipeline LP, Consumers Energy, Equitable Gas Co., Marathon Oil Company, New Jersey Natural Gas Company, New Mexico Gas Company, Nicor Gas, ONEOK Partners, Panhandle Eastern Pipe Line Company, and Quicksilver Resources



CONTINUING EXCELLENCE—7 YEARS



Natural Gas STAR Partner company staff with EPA Natural Gas STAR Program Representative Carey Bylin. The 7-year Continuing Excellence Partner companies are Devon Energy, Puget Sound Energy, and Shell Exploration and Production Company

CONTINUING EXCELLENCE—10 YEARS

Natural Gas STAR Partner company staff with EPA Natural Gas STAR Program Representative Carey Bylin. The 10-year Continuing Excellence Partner company is Hess Corporation's Americas Exploration and Production.



CONTINUING EXCELLENCE—15 YEARS

The 15-year Continuing Excellence Partner companies are Central Hudson Gas & Electric Corporation, Orange and Rockland Utilities, Inc., and Public Service Electric and Gas Company.

CONTINUING EXCELLENCE—17 YEARS



Natural Gas STAR Partner company staff with EPA Natural Gas STAR Program Representative Carey Bylin. The 17-year Continuing Excellence Partner companies are Consolidated Edison Company of New York, Inc., National Grid, UGI Utilities, Inc., Washington Gas, and Williams Gas Pipeline.

More 2010 Annual Implementation Workshop information, proceedings, and presentations are available online at epa.gov/gasstar/workshops/annualimplementation/2010.html.

Partner Profile: Newfield Exploration Company

A Natural Gas STAR Partner since 2004, Newfield Exploration Company (Newfield) is a growing independent oil and natural gas company with a program of exploration, production, and acquisitions that is headquartered in Houston, Texas. Newfield's most recent activities related to methane emissions management—hosting a compressor station measurement study and developing a new corporate inventory tool—are a natural extension of its participation in the Program.



Newfield's current proved reserves total 3.6 trillion cubic feet equivalents and stem from domestic operations in the Mid-Continent, the Rocky Mountains, onshore Texas, and the Gulf of Mexico and international operations including offshore Malaysia and China. Approximately 70 percent of the company's reserves are natural gas with 93 percent of the reserves from domestic U.S. operations.

Newfield has been actively involved in cost-effectively reducing methane emissions since joining Natural Gas STAR. In 2009, Newfield achieved nearly 1.2 billion cubic feet (Bcf) in methane emissions reductions, and the company's cumulative reductions total over 5.4 Bcf. Approximately 78 percent of its methane emissions reductions are the result of the following activities: 1) installing vapor recovery units (VRUs), 2) installing plunger lifts, and 3) replacing high bleed pneumatic devices.

Because of its continuing efforts, Newfield has received the 2005 Rookie of the Year award, a 2008 Continuing Excellence Award (5 years), and the 2010 Implementation Manager of the

Year award (Mike Pontiff). Recent Natural Gas STAR activities include sponsoring a producers technology transfer workshop in Vernal, Utah and holding a measurement study/site visit at Newfield's Pleasant Valley compressor station.

Pleasant Valley Station Survey

In March 2010, Newfield agreed to work with Natural Gas STAR by hosting a technology transfer workshop in conjunction with a measurement study and site visit to demonstrate tools and technologies to cost effectively reduce methane emissions. Newfield's Pleasant Valley Station in the Uinta Basin area of Utah was the survey site. A Natural Gas STAR measurement study team used the GasFindIR™ infrared camera to identify emission sources and used



Exhibit 1: Workshop site visit attendees inspecting a leak with the GasFindIR camera at Pleasant Valley station.

turbine meters, calibrated bags, and a Hi Flow® Sampler to measure the emission rates. This site visit allowed other Partners to witness the effectiveness of these technologies and techniques.

The Pleasant Valley compressor station is a newly constructed facility and is also an example of Newfield's Process Optimization (PRO-OP) approach to reducing methane emissions. According to Newfield, PRO-OP is "a systematic approach to increase production efficiencies and profitability through evaluating process components, reducing methane emissions on a cost-effective basis." This

practice aims to get as much product from the wellhead to the sales meter as possible by considering the process on the whole rather than considering the emissions source in isolation. For more information on PRO-OP, see Newfield's presentation at a recent Natural Gas STAR workshop: epa.gov/gasstar/workshops/techtransfer/2010/vernal.html.

The Pleasant Valley Station measurement study indicated that methane emissions from Newfield's operations fell into four types of source categories: 1) pneumatic devices, 2) leaks, 3) rod packing, and 4) tank vents. Pneumatic devices accounted for the largest percentage of methane emissions while the single condensate tank vent made up the smallest percentage. Twenty-one individual leak sources were detected, and 20 could be targeted with proven best management practices.



Exhibit 2: Measurement experts quantifying a methane emissions source with the Hi Flow Sampler at Pleasant Valley station during the Natural Gas STAR workshop site visit.

PRO-OP is applicable to both new and old facilities, helping to identify opportunities such as eliminating emissions sources, capturing emissions for sales, or flaring. As a result of the emissions discovered during the measurement study, Newfield plans to repair what leaks were found. Since the field study was conducted at Pleasant Valley, electricity has been run to this facility, and all pneumatic devices have been converted to instrument air systems. Also, vent emissions from a single storage tank

are now being routed to a combustor, and the emission volumes are being monitored to determine the economic feasibility of installing a vapor recovery system.

Corporate Greenhouse Gas Inventory Tool

Another aspect of Newfield's methane emissions management is its recently developed company-wide process for quantifying and recording greenhouse gas (GHG) emissions from each facility. The main purpose of this inventory tool is to provide the company with an "evergreen program that provides near real time data." The motivations for creating and implementing a corporate inventory included:

- potentially participating in voluntary GHG programs,
- establishing and achieving corporate social responsibility goals regarding carbon management,
- managing risks and identifying opportunities,
- providing information to stakeholders, and
- preparing for pending federal legislation that might require such tracking.

With these outcomes in mind, the tool has two components which collect, aggregate, and store a variety of data streams already being generated by Newfield.

The first component is a third party software package possessing the following characteristics:

- dashboard capability,
- capable of providing near real-time data, and
- complete environmental management information system (EMIS) package.

The other component of Newfield's inventory tool is the Carbon System Interface (CSI). It was generated by Newfield to act as a "bridge" between the variety of existing Newfield data streams and the third party EMIS package, allowing operators to access daily/monthly data and any new equipment or process changes.

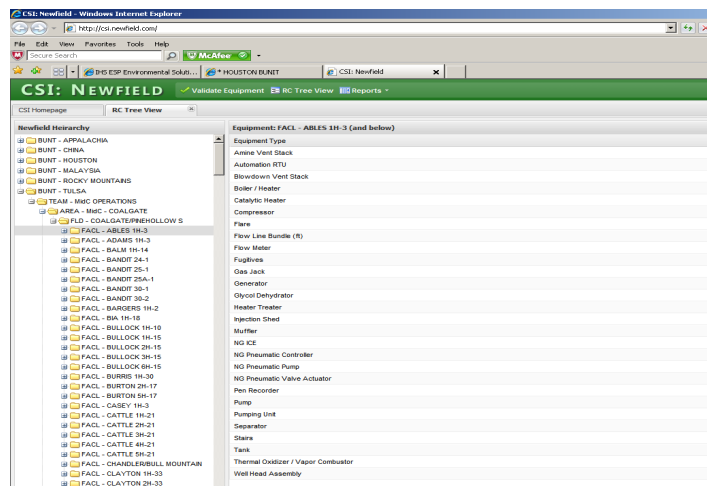


Exhibit 3: A screenshot of the Carbon System Interface (CSI), a component of Newfield's corporate GHG inventory tool.

Capture of Newfield's existing data into the CSI is an automated process, with the exception of data for drilling rig runtimes, electricity usage, certain venting volumes, and vehicle miles (contractor and fleet).

The combined two components of Newfield's inventory tool include both direct and indirect emissions. Direct sources are those sources which Newfield has direct control of in its field operations. Indirect sources are typically associated with third party activity.

One feature of the inventory tool is its ability to generate emissions profiles specific to the requirements of state, permit, business unit, or other reporting activities. The tool accomplishes this by building a library of calculation methodologies over a period of time which can be applied to the Newfield data. Combined with standard accepted manufacturer emissions factors, or state- or regional-specific factors, different profiles are generated for different contexts.

Once the tool was completely installed and integrated, Newfield trained its employees on both the third party EMIS and the CSI software. A QA/QC program oversees the tool, helping to maintain quality and verification in production accounting, mapping of sources, equations, profiles, and the CSI itself. With this new GHG inventory tool, Newfield will acquire a more transparent view of its own emissions to help further its emissions reduction goals.

Outlook for the Future

With these two activities—the Pleasant Valley measurement study and GHG inventory tool—Newfield is acquiring additional knowledge to make informed decisions on methane emissions mitigation.

Technology Spotlight: Casinghead Gas Capture

A common issue encountered by many producers is the buildup of pressure in the casing of a mature oil well. Increased pressure in the well casing from accumulated gas, in combination with the surface equipment backpressure, restricts oil flow and decreases production.

Casinghead gas must be removed to allow an oil well to be most productive. This gas is typically vented to the atmosphere when the wellhead pressure at the surface drops below the sales line pressure. The casinghead gas pressure is preferably as close to zero psig as possible. A cost-effective alternative to venting is casinghead gas capture which has the benefits of maintaining oil well productivity, reducing methane emissions, and providing a source of natural gas which can be put to beneficial use in a number of ways.

Project Description

Using a small wellhead compressor to relieve well formation pressure can increase oil production and recover BTU-rich gas for sales or on-site use. The compressor maintains the casinghead pressure as close to zero as possible which also stabilizes the oil line pressure and reduces fluctuations. Companies have traditionally used skid-mounted compressors for this project type.

Types of skid-mounted compressors that can be utilized in this project include: 1) rotary vane, 2) rotary screw, 3) scroll, and 4) reciprocating. Rotary vane compressors are generally the most cost-effective when handling wet casinghead gas (this gas is normally wet because it flashes off the oil reservoir and typically has a specific gravity of around 0.85 [16 gallons of liquid per thousand cubic foot (Mcf) gas]). Scroll compressors can handle wet gas and were covered by a previous *Partner Update* article found at epa.gov/gasstar/newsroom/partnerupdatespring2010.html.



Exhibit 1: A skid-mounted compressor package recovering casinghead gas at a wellhead (Source: Hy-Bon Engineering).

Since not all wells respond favorably to reducing casinghead pressure, companies may want to test a well before purchasing or leasing compression equipment. Testing is performed to

determine a well's response and ensure that increased productivity is not temporary. Adjacent wells from the same formation may have different responses to casinghead gas capture, which also points to the need for testing. Generally, if increases in oil production remain constant after 30 to 45 days, it is appropriate to proceed with implementation. Flow increase and emissions reductions data collected during testing will provide the means to determine the project's economics.

Considerations/Limitations

The success of this project—to maximize oil production, minimize emissions, and reduce downtime—is largely dependent on matching the compressor specifications to the specific reservoir. Each well has its own unique characteristics, so the compressor needs to be designed accordingly. Gas volume, discharge line pressure, and specific gravity of the gas stream are all key factors that need to be considered when designing the compressor for a well.

The key limitation to keep to mind is that there is no definite method or rule-of-thumb for estimating a well's response to casinghead gas capture. This is because it is difficult to predict what is occurring below in the formation itself. Generally, this project tends to be successful in wells with water or carbon dioxide floods, typically used in enhanced oil recovery (EOR) where the produced gas can be re-injected into the reservoir. Despite this uncertainty, experience from a vendor shows about 65 percent of oil wells in mature basins respond successfully to casinghead gas capture.

Beam Gas Compressor™ (BGC™)

- Another option for casinghead gas capture projects
- Utilizes mechanical energy from well's rod pumping unit as primary energy source
- Single- or double-acting: can compress on both strokes
- Differential pressure up to 9 compression ratios
- Volumes can be as high as 500 Mcf/day, depending on 1) pumping unit size, 2) flowline pressure, 3) formation attributes, and other characteristics.



Exhibit 2: Two Beam Gas Compressors™ each utilizing the mechanical energy of a pumpjack to pull gas from the casing and discharge it into a flowline (Source: Permian Production Equipment, Inc.).

Skid-mounted compressors usually range from 10 to 200 horsepower and can be powered by either electricity or a combustion engine. The availability of a power source is the key factor in determining which option is more viable. Electric-driven compressors are usually preferred because of less required maintenance and because they do not consume valuable sales gas. If electricity is not available at a wellhead, then a beam-mounted compressor may provide an economic solution (see insert).

The proximity of the compressor to the wellhead is another factor to consider. Often a single compressor can be linked to multiple wells if they are close enough to each other. If the wells are too far, then pressure drop can become an issue. All wells need to be at or about the same surface pressure, so they can all be pulled upon equally by the compressor. Operators trying to save on compressor costs can link wells that are far apart, but doing so can keep the compressor from bringing the nearby wells closer to zero pressure, losing potential revenue in recovered gas.

Also, the use of one compressor for multiple wells introduces a dependence on that single unit. In the case when the compressor breaks or is down for maintenance, operators would either have to: 1) vent the casinghead gas to the atmosphere from all linked wells to continue oil production, 2) refrain from venting and have decreased oil production, or 3) use a temporary compressor for gas capture. Until the original compressor is repaired, the linked wells will not be able to both reduce emissions and increase the operator's revenue.

Other potential issues to keep in mind before implementing this project are variations in wellhead flow rate, insufficient oil flow, and the production of liquids from casinghead gas. Most compressors cannot handle liquid slugs, so design modifications to the gas gathering system must be made. Examples include the use of drip pots, a scrubber, or a separator.

Costs and Benefits

The main benefit of this project type is the additional revenue from increased oil production. The sales of previously uncollected associated gas and emissions reductions are important secondary benefits.

The major costs associated with the project are 1) equipment costs of the compressor package and piping, 2) installation costs, and 3) annual operating and maintenance (O&M) costs for fuel or electricity. These costs vary from site to site and depend on the type and size of the compressor as well as the piping distance from well to compressor and compressor to sales line. Several Natural Gas STAR Partners have reported success in implementing projects to reduce casinghead gas pressure on their wells and have reported payback periods of less than one year (see PRO Fact Sheet links below)



Exhibit 3: Flow lines from multiple wells linked to a single compressor package. Distance is a key consideration before implementing this method of recovery (Source: Hy-Bon Engineering).

Conclusion

Casinghead gas capture has become an effective way for companies to increase oil production and recover BTU-rich gas for sales by using a small wellhead compressor or vapor recovery unit to reduce the pressure buildup in the annular space of an oil well. Adequate testing before implementation is recommended. This project is a cost-effective alternative to venting, reducing a significant amount of methane emissions from mature oil-producing wells.

For more information:

PRO Fact Sheet No. 701: Connect Casing to Vapor Recovery Unit.
epa.gov/gasstar/documents/connectcasingtovaporrecoveryunit.pdf

PRO Fact Sheet No. 702: Install Compressors to Capture Casinghead Gas.
epa.gov/gasstar/documents/installcompressors.pdf

McCoy, Charlie. *Compressor Gathers Low-Pressure Gas*. The American Oil & Gas Reporter. August 2008.
beamgascompressor.com/articles.htm

Richards, Larry and Sidebottom, James. *Systems Reduce Casinghead Pressure*. The American Oil & Gas Reporter. May 2005. hy-bon.com/tech%20library/pdf/case%20studies/Article-AOGRCasehead.pdf

Prospective Projects Spotlight: Reducing Supply Pressure in Pneumatic Systems

Natural Gas STAR Partners have used various methods for reducing pneumatic device emissions (see insert), and the alternative explored here is to reduce the supply pressure. Depending on operating parameters and design of the pneumatic system, the pneumatic gas supply pressure can range from 20 pounds per square inch gauge (psig) to more than 100 psig. Because the supply pressure has a direct effect on the bleed rate and fugitive emissions to the atmosphere, this project idea can have a significant impact on methane emissions.

Existing Mitigation Opportunities

- Replacement of high bleed devices with low bleed devices.
- Retrofit of high bleed devices to achieve low bleed characteristics.
- Converting gas supply to instrument air.
- Converting to electric valve controllers.
- Converting to mechanical control systems.

More information is available at:

www.epa.gov/gasstar/documents/ll_pneumatics.pdf

Background

The basic pneumatic device schematic can be seen below in Exhibit 1. Clean, dry, pressurized natural gas is regulated to a constant pressure. This gas supply is used both as a signal and a power supply. A small stream is sent to a device that measures a process condition (liquid level, gas pressure, flow, temperature). For a 20 psig supply pressure, this device regulates the pressure of this signal stream (from 3 to 15 psig typically) in proportion to the process condition. The stream flows to the pneumatic controller, where its variable pressure is used to regulate a valve actuator. The valve actuator may also be connected directly to the pneumatic gas supply and uses this “power” pneumatic gas to adjust the position of the control valve.

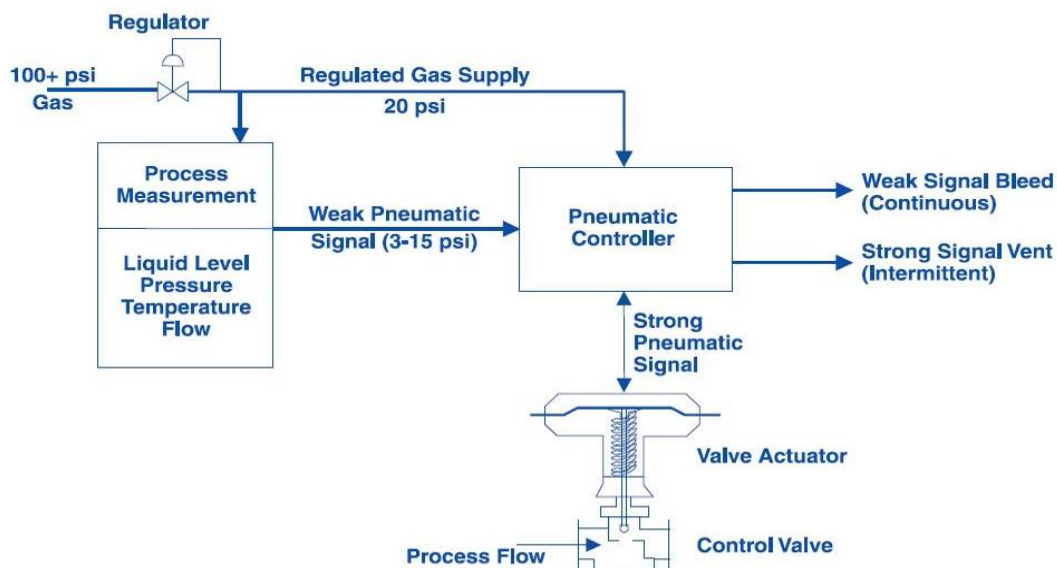


Exhibit 1: Basic Pneumatic Device Schematic

Within this control scheme, various factors affect the gas bleed rate to the atmosphere, especially the control configuration and the supply pressure. Control configuration options are proportional band, reset, integral, and derivative functions which represent increasing sophistication in valve responsiveness to the process condition. The supply pressure is the gas pressure required to exert sufficient force on the diaphragm against a spring to open or close a valve. For some pneumatic systems, the supply gas pressure setting might be higher than necessary. The greater the supply pressure, the greater the bleed from the device.

Implementation

Many pneumatic devices operate with medium or high supply pressures (35 psig or greater). However, it might be possible to lower the supply pressure while maintaining adequate energy in the gas supply to transmit a process signal and/or actuate a valve. A lower supply pressure is applicable for processes that can tolerate a slower response and some drift in its set point, such as a liquid level setting between empty and full.

In some cases, the supply pressure can be lowered by simply adjusting the regulator. In other cases, it might be necessary to replace equipment since some devices are not designed to operate at lower supply pressures. In other words, the pressure regulator might not have the capability to operate at a lower supply pressure. The actuator, as designed for a higher supply pressure, might not operate sufficiently well with a lower supply pressure. Depending on individual characteristics of each pneumatic system, it might be necessary to replace the regulator, re-calibrate the actuator spring, or both.

Methane Savings and Project Economics

Emissions reductions will vary per device and can range from 13 to 131 Mcf per year per device. Exhibit 2 illustrates achievable reductions for six different devices, including pressure, liquid level, and temperature controllers. The achievable reductions of implementing this project opportunity on a facility level will vary according to the total device count.

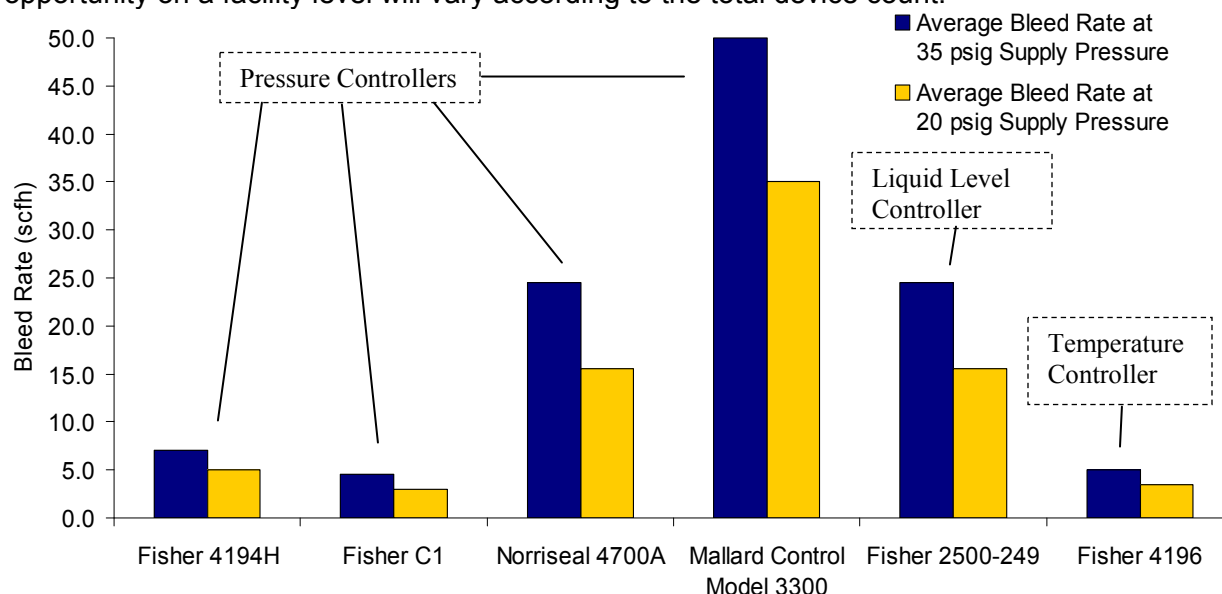


Exhibit 2: Achievable Reductions for Six Pneumatic Devices

Gas savings from this opportunity can be significant and warrant investigation into the project economics. As an example for one model, by reducing the supply pressure from 35 psig to 20 psig, it is possible to reduce the average bleed rate by 1.5 to 15 standard cubic feet per hour (scfh). Assuming year-round operation (8,760 hours per year), this reduces annual emissions by

13 to 131 thousand cubic feet per device (Mcf/device). Exhibit 3 summarizes an economic analysis for two different pneumatic device models as examples representing the largest and smallest gas savings of the six devices shown in Exhibit 2.

The capital costs of implementing this project idea will vary depending on the work required to modify the pneumatic gas supply, as mentioned in the previous section. For the basic economic analysis summarized in Exhibit 3, it is assumed that the regulator would have to be replaced. This was selected as the representative case because it is not as simple as turning a knob to adjust the pressure setting but is not as complex as re-calibrating the actuator.

PROJECT SUMMARY: REDUCE SUPPLY PRESSURE IN PNEUMATIC SYSTEM						
Type of Device	Mallard Control Model 3300 (Pressure Controller)			Fisher C1 (Pressure Controller)		
Supply Pressure Reduction	35 psig to 20 psig			35 psig to 20 psig		
Annual Operating Hours	8,760			8,760		
Incremental Capital & Installation Costs	\$204 ¹			\$204 ¹		
Annual Incremental Labor & Maintenance Costs	\$0			\$0		
Methane Saved (Mcf per year per device)	131			13		
Gas Price per Mcf	\$3	\$7	\$10	\$3	\$7	\$10
Value of Gas Saved	\$394	\$920	\$1,314	\$234	\$546	\$780
Payback Period in Months	7	3	2	11	5	4

¹ Capital cost includes the cost of a new pressure regulator (\$62.00) and an assumed 2 hours of labor (at \$71 per hour).

Exhibit 3: Summary of Economics for two Representative Single Device Scenarios

The table shows that lowering supply pressure, where applicable, is an activity that pays back in less than one year, and the benefits compound as the number of affected devices increases.

Conclusion

In some situations it may be possible to reduce the supply pressure in pneumatic devices, which can achieve significant gas savings by operating existing equipment differently. This project idea can also complement other Natural Gas STAR practices to reduce emissions from pneumatic devices when carried out in combination.

Climate Policy Update: Mandatory Reporting of Greenhouse Gases Rule, Subpart W

On November 8, 2010, Administrator Jackson signed the Greenhouse Gas Mandatory Reporting Rule for the Petroleum and Natural Gas Systems source category (40 CFR part 98, subpart W). This mandatory reporting rule requires facilities from segments of the petroleum and natural gas industry that emit 25,000 metric tons or more of carbon dioxide equivalent per year, to report carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) emissions, along with relevant activity data.

Who is affected?

Facilities that emit greater than or equal to the reporting threshold of 25,000 metric tons of carbon dioxide equivalent will be required to report emissions. Industry segments required to report include offshore petroleum and natural gas production, onshore petroleum and natural gas production, onshore natural gas processing, onshore natural gas transmission compression, underground natural gas storage, liquefied natural gas (LNG) storage, LNG import and export terminals, and natural gas distribution. Reporting is at the facility level.

What must be reported and how?

The final rule requires petroleum and natural gas facilities to report annual methane (CH₄) and carbon dioxide (CO₂) emissions from equipment leaks, and venting, and emissions of CO₂, CH₄ and nitrous oxide (N₂O) from flaring. Emissions from stationary and portable combustion equipment are to be reported from the onshore petroleum and natural gas production industry segment. Emissions from stationary combustion equipment are to be reported from the natural gas distribution industry segment also.

The calculation methodologies used in this rule generally include the use of engineering estimates, emissions modeling software, and emission factors or when other methods are not feasible, direct measurement of emissions.

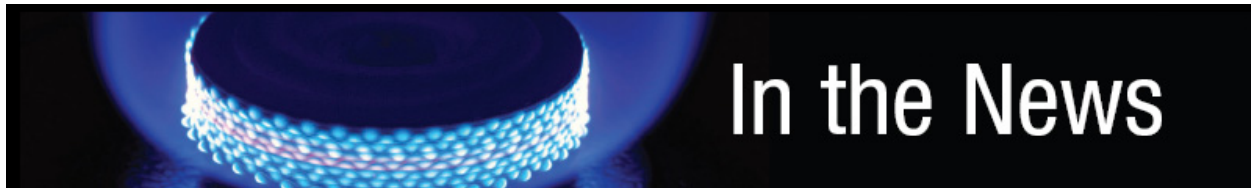
When must emissions be reported?

Data collection under subpart W begins on January 1, 2011, with reports due annually to EPA with the first report due to EPA by March 31, 2012 covering 2011 emissions. Certain reporters may use best available monitoring methods (BAMM) for a limited period during the 2011 data collection year, for some emissions sources, if they meet specific criteria.

Further details on the rule can be found at

www.epa.gov/climatechange/emissions/subpart/w.html





In the News

Utah BLM Request for Participation

In an effort to support reducing fugitive methane emissions, Utah BLM is requesting a participant that would be interested in a project to capture casing-head gas that is released at the wellhead. In isolated development areas, without access to a pipeline, natural gas from an oil well may be flared as the preferred alternative. With advances in technology it may be possible to collect the casing-head gas and compress it at the wellhead so it can be marketed. The economic feasibility and timely payout generally is dependent on gas quality and quantity.

Please share with us any experiences you may have with capturing casing-head gas, successful or not. Also, if you have an area that would be a good candidate for a pilot project please contact:

Mike McKinley
Environmental Scientist/NRS, P.G.
Fluid Minerals Branch
BLM Utah State Office
440 West 200 South, Suite 500
Salt Lake City, UT 84101

email: mike_mckinley@blm.gov
phone: 801-539-4046
fax: 801-539-4261

EPA Helps Launch Global Methane Initiative to Cut Greenhouse Gases

On October 1st, 2010 the new Global Methane Initiative was launched with support from 38 countries, urging stronger international action to address near-term climate change. The initiative will build on the existing structure and success of the Methane to Markets Partnership, which was launched in 2004, while enhancing and expanding its efforts and encouraging new financial commitments from developed country partners. The United States is pledging \$50 million over the next five years to the Global Methane Initiative and is seeking similar pledges from other developed countries to support implementing methane emissions reduction projects and technologies. EPA estimates that an enhanced global effort to reduce methane emissions could achieve reductions of more than 1.5 billion metric tons of carbon dioxide equivalent. For more information about the Global Methane Initiative visit: <http://www.globalmethane.org/gmi/>



New Natural Gas STAR Partners

Gill Ranch Storage, LLC

The Natural Gas STAR Program is pleased to welcome Gill Ranch Storage, LLC as an official Partner in the transmission sector of the Natural Gas STAR Program. Gill Ranch Storage is an underground natural gas storage facility near Fresno, California and near Pacific Gas and Electric Company's (PG&E) mainline transmission system. Gill Ranch Storage has the capacity to provide approximately 20 billion cubic feet (Bcf) of underground natural gas storage.



GILL RANCH STORAGE



It is the farthest south of all independent storage facilities on the PG&E system, offering access five interconnects. Its parent company is Oregon-based NW Natural Gas Storage, LLC.

UGI Central Penn Gas and UGI Penn Natural Gas

The Natural Gas STAR Program is pleased to welcome both UGI Central Penn Gas and UGI Penn Natural Gas as official Partners in the distribution sector of the Natural Gas STAR Program. Both companies are divisions of UGI Utilities Inc., a Partner since 1993.



UGI Central Penn Gas, Inc. distributes natural and liquefied petroleum gas in Pennsylvania (central and northern regions), Maryland, and Delaware. The company offers natural gas distribution, transmission, and storage services, as well as sells propane. The company, formerly known as Penn Fuel Gas, Inc., was founded in 1944 and is based in Allentown, Pennsylvania.

Serving approximately 158,000 customers in 13 counties through Pennsylvania, UGI Penn Natural Gas, Inc. distributes natural in northeastern and central Pennsylvania as the region's largest natural gas distribution company. The company sells and services a range of natural gas appliances and equipment, and its customers utilize the natural gas for space heating, water heating, cooking, and cooling. The company, formerly known as PG Energy, Inc., was founded in 1854 and is headquartered in Wilkes-Barre, Pennsylvania.



New Global Methane Initiative Member Countries

Nicaragua

Nicaragua was welcomed into GMI on 30 September 2010. Nicaragua has opportunities for methane capture and reuse projects in the areas of agriculture and landfills, and will be joining those respective subcommittees. In Nicaragua, there is a huge potential to generate electricity using methane produced by reserves of biomass (i.e., vegetable residues from food and agricultural products processing such as sugar) as well as the 761,000 tons per day generation of urban organic wastes. Nicaragua will also contribute its experience in small biogas generation in the agro-food industry and municipal landfills.



Turkey



Turkey was welcomed into GMI on 30 September 2010 and will participate in the Coal Mines, Landfills, and Oil and Gas Subcommittees. Based on data in EPA's *Global Anthropogenic Emissions of Non-CO₂ Greenhouse Gases* report, in 2010, Turkey's estimated anthropogenic methane emissions ranked 12th in the world. Oil and natural gas systems represent half of Turkey's anthropogenic methane emissions—57.20 MMTCO₂E—and an additional 26 percent (28.85 MMTCO₂E) come from agriculture (manure management), coal mining, landfills, and wastewater. In particular, Turkey expressed interest in developing clean energy opportunities for use of methane captured from its large coal reserves.



Upcoming Events

Stay tuned for more upcoming Natural Gas STAR and Global Methane Initiative events. Additional workshops in 2011 will be announced soon!



Natural Gas STAR Contacts

Program Managers

Scott Bartos (bartos.scott@epa.gov)
Phone: (202) 343-9167

Jerome Blackman (blackman.jerome@epa.gov)
(202) 343-9630

Carey Bylin (bylin.carey@epa.gov)
(202) 343-9669

Roger Fernandez (fernandez.roger@epa.gov)
(202) 343-9386

Suzie Waltzer (waltzer.suzanne@epa.gov)
(202) 343-9544

Natural Gas STAR Program U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW (6207J) Washington, DC 20460

For additional information on topics in this *Update*, please contact Scott Bartos.

