



REDUCING PRODUCTION EMISSIONS



Deploying advanced technologies, state of the art controls and adherence to the highest environmental standards, Oklahoma oil and natural gas producers have adopted best practices to limit emissions from engines, gas processing equipment and other sources involved in drilling and production. They also work closely with state and federal agencies to ensure all sources of air emissions meet or exceed regulatory standards.



Many Oklahoma oil and natural gas companies also participate in the EPA Natural Gas STAR Program¹ – this voluntary partnership improves environmental performance through the use of cost-effective technologies and practices.

ACTIVELY PARTICIPATING IN EPA’S VOLUNTARY NATURAL GAS STAR PROGRAM IS JUST ONE WAY PRODUCERS/OPERATORS ARE MINIMIZING ENVIRONMENTAL IMPACT. BELOW ARE SOME OF THE PROGRAM’S MOST WIDELY IMPLEMENTED TOOLS.

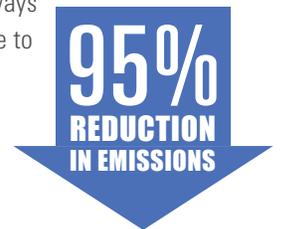
LOW- AND NO-BLEED PNEUMATIC CONTROLLERS

Producers commonly use pneumatic devices for controlling liquid levels and regulating pressures and temperatures. When low- or no-bleed pneumatic control devices are installed in place of high-bleed devices, they yield significant environmental and economic benefits. In fact, no-bleed pneumatic valves have shown to reduce methane emissions equivalent to about 50 metric tons of CO₂ per device each year – which is the equivalent to taking nine cars off the road! These pneumatic devices are commonly found at well sites and other oil and natural gas facilities throughout Oklahoma and the U.S.



GREEN COMPLETION METHODS

In recent years operators developed a new technique to capture more of a well’s produced natural gas during its completion phase. That technique is reduced-emission completion (REC), or more commonly referred to as “green completion.” Compared to venting this gas, green completions can reduce emissions of methane and volatile organic compounds (VOCs) by up to 95 percent.² This innovative method takes place after a well has been hydraulically fractured, and during the “clean-up stage” when water and fracture fluid is removed from the wellbore and formation. During clean-up, some natural gas may flow back with the water and fluids. Prior to the availability of new REC techniques, gases were always vented into the air or burned in a flare to reduce emissions. Now, using green completion methods, the gases are separated from the water, collected in pipelines and then marketed.





INSTALLING VAPOR RECOVERY UNITS

When oil is stored in tanks at or near well sites and other production facilities, methane and light hydrocarbons vaporize and can sometimes be vented. One way to prevent vapor emissions is to install vapor recovery units (VRUs). VRUs mostly control flash gas emissions.

VRUs provide significant environmental, as well as economic, benefits by capturing as much as 95 percent of the vapors. The vapors recovered can be piped to natural gas gathering pipelines, used as a fuel or piped to a unit that separates natural gas liquids (NGLs) and methane for sale. VRUs are substantially reducing greenhouse gases.³

ADVANCED LIQUID UNLOADING TECHNOLOGIES

As gas wells mature, the accumulation of fluids in the wellbore can slow or even halt gas production; gas flow is maintained by removing the fluids. Traditionally, operators would vent gas from the well to unload liquids from the well bore. Now, operators are using more advanced technologies such as velocity tubes, surfactant injection, plunger lifts, and/or reservoir energy management to maintain well production. When using plunger lifts, pressure buildup pushes a steel plunger from the bottom of the wellbore – along with a column of fluid ahead of it – up to the surface where the fluids



are piped to nearby storage tanks, then properly disposed. The plunger lift system is completely contained within the wellbore to minimize any gas loss. Additionally, recent advances in software and hardware technologies provide producers access to reliably automated, “smart” remote plunger lift controls.

¹ Environmental Protection Agency Natural Gas STAR Program
<http://www.epa.gov/gasstar/>

² Environmental Protection Agency-Oil and Natural Gas Air Pollution Standards
<http://www.epa.gov/airquality/oilandgas/actions.html>

³ Lessons Learned from Natural Gas STAR Partners. Installing Vapor Recovery Units on Storage Tanks.
https://www.epa.gov/sites/production/files/2016-06/documents/ll_final_vap.pdf



LEARN MORE

To learn more about practices and safeguards oil and natural gas producers use to protect the air we breath, please visit the following sources:

U.S. Forest Service- Emission Reduction Techniques for Oil and Gas Activities

<http://www.fs.fed.us/air/documents/EmissionReduction-072011x.pdf>

American Carbon Registry- Emission Reduction Measurement and Monitoring for the conversion of high-bleed pneumatic controllers in Oil and Natural Gas Systems.

<http://americancarbonregistry.org/carbon-accounting/methodology-for-conversion-of-high-bleed-pneumatic-controllers-in-oil-natural-gas-systems/ACR%20Methodology%20for%20the%20Conversion%20of%20High-Bleed%20Pneumatic%20Controllers%20in%20oil%20and%20Natural%20Gas%20Systems%20v1.1.pdf>