

Liquefied Natural Gas/ Compressed Natural Gas **Opportunities**



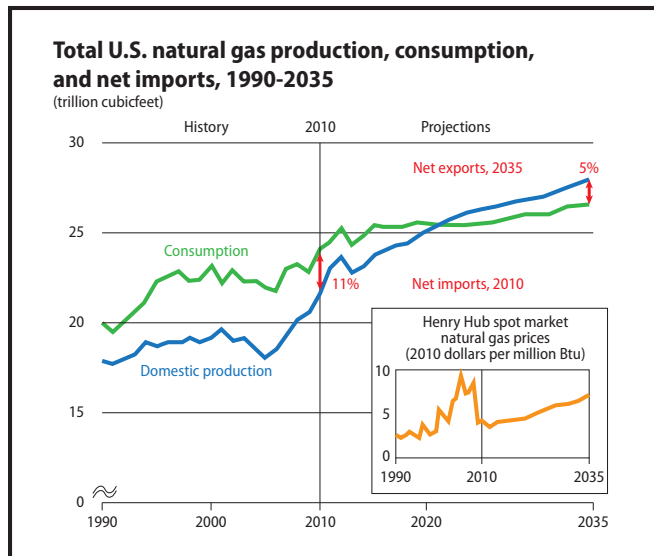
Fixed Gas and Flame Detection Applications



While there are many solutions that can help meet our energy needs into the future, natural gas and its benefits are available now. The significant increase in the supply of natural gas, brought about by technical advancements in producing gas from shale deposits, has revolutionized the gas industry; opening up new sources of gas production in North America. Such increased production has escalated U.S. competitiveness, promoted job growth and bolstered the economy with lower, more stable natural gas prices.¹

¹<http://www.powerincooperation.com>

*Because every life has a **purpose...***



<http://www.eia.gov>

Liquefied natural gas (LNG) is natural gas that has been converted to liquid form for ease of storage or transport, and its use allows for the production and marketing of natural gas deposits that were previously economically unrecoverable. This technology is used for natural gas supply operations and domestic storage, and in consumption such as for vehicle fuel.

Compressed natural gas (CNG) is natural gas under pressure which remains clear, odorless, and non-corrosive. CNG is a fossil fuel substitute for gasoline (petrol), diesel, or propane/LPG and is a more environmentally clean alternative to those fuels, and it is much safer in the event of a spill.

Interest in LNG and CNG has been rekindled and is expected to play an important role in the natural gas industry and energy markets over the next several years. As the World Leader in Fixed Gas and Flame Detection, we will identify specific applications for opportunity in LNG and CNG.

Application Profile: Portable LNG Vaporizers – Drill Sites

Gas wells are typically drilled at remote sites. Often times it is a result of either the location of the gas, proximity to the public or a combination of both. Regardless, power is rarely available and prohibitively expensive to obtain. Drillers have found a way around this obstacle by employing portable vaporizers and temporary Liquefied Natural Gas (LNG) sources.

An LNG truck is sent to a potential drill site along with the portable vaporizer. After the connection is made, Compressed Natural Gas (CNG) is available to run a large generator that is capable of providing power to the entire drill site. Once the site is producing gas and is self sustainable, the LNG and vaporizer are moved to the next site.

Safety devices are always employed when LNG is being used or stored due to its inherent explosive nature. LNG is stored at -260 F and as it is slowly warmed and vaporized it rapidly expands to 600 times its liquid volume. These harsh conditions are stressful on piping and valves which can result in potential leaks.

Application

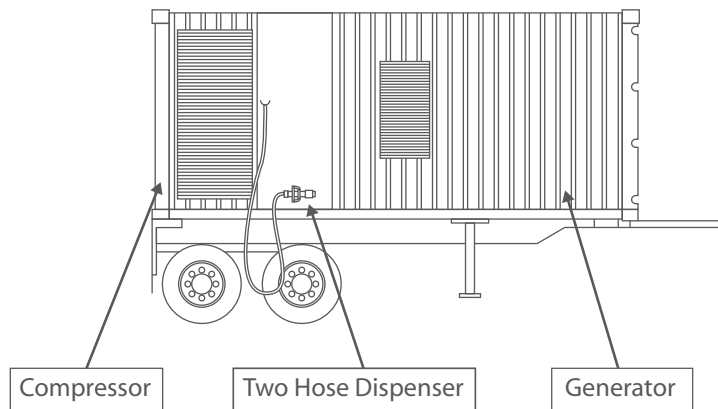
The portable vaporizers are subsequently fitted with gas and flame detection to quickly shut down the flow of LNG in order to minimize the fuel source of a possible explosion or fire. Ultima® X Series Gas Monitors and FlameGard® 5 UV/IR Flame Detectors are ideally suited for this application.



Application Profile: Portable CNG/Permanent Filling Stations for Vehicles

Similar to the trailers made for Drill Sites, companies are also buying portable units for the purpose of supplying fuel to fleet vehicles. Many companies across the country are retrofitting their delivery trucks to run on LNG as opposed to diesel. With the abundance of Natural Gas in America coupled with the already high and rising price of diesel it is economically viable to make the conversion.

Since the infrastructure does not currently exist to support the re-fueling needs of their fleets, many companies are installing their own filling stations at strategic locations in their local areas.



Application

These stations are often enclosed to protect the equipment from vandalization by the public. Gas and flame detectors are installed inside the trailer. MSA's UltimaX Series Gas Monitors, FlameGard 5 UV/IR Flame Detectors, UltraSonic™ EX-5 Gas Leak Detectors, Ultima OPIR-5 Open Path Infrared Detector would provide optimal solutions for a safe work environment in enclosed spaces.

Application Profile: LNG Vehicle Maintenance Facilities

LNG vehicles are driven thousands of miles every week and therefore require maintenance much more frequently than passenger cars. Companies typically have a large garage and a fleet of mechanics to reduce the downtime of their trucks. Being indoors, a leak from one of the pressurized CNG tanks would rapidly collect at the ceiling and could exceed the Lower Explosive Limit (LEL) in a short amount of time.

Application

As a result, the maintenance and storage facilities are typically outfitted with gas detection at the ceiling. Due to the size of the buildings, a combination of point and open path gas detectors are often employed. Together, MSA's UltimaX Series Gas Monitors and Ultima OPIR-5 Open Path Infrared Detectors would provide full detection coverage.

Fixed Gas and Flame Detection Instruments



Ultima X Series Gas Monitors

MSA's Ultima X Series Gas Monitor is designed to provide thorough, continuous monitoring and detection of oxygen, as well as combustible and toxic gases.



FlameGuard 5 UV/IR Flame Detector

MSA's FlameGuard 5 UV/IR Flame Detector is designed to detect fires and provide alarm outputs directly from the detector while maintaining false alarm immunity.



UltraSonic EX-5 Gas Leak Detector

Unlike conventional gas detectors that measure %LEL, ultrasonic gas leak detectors respond to the ultrasonic noise created by a pressurized gas leak. This ultrasonic noise provides a measurement of the leak rate and establishes warning and alarm thresholds. The Ultrasonic EX-5 Gas Leak Detector is ideally suited for outdoor installations and indoor spaces with high ventilation rates.



Ultima OPIR-5 Open Path Infrared Detector

MSA's Ultima OPIR Open Path Infrared Detector provides continuous monitoring of methane, propane, and other combustible gases with this open path infrared detector.

Note: This Bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.



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MSA Corporate Center
1000 Cranberry Woods Drive
Cranberry Township, PA 16066 USA
Phone 724-776-8600
www.MSAafety.com

U.S. Customer Service Center
Phone 1-800-MSA-2222
Fax 1-800-967-0398

MSA Canada
Phone 1-800-672-2222
Fax 1-800-967-0398

MSA Mexico
Phone 01 800 672 7222
Fax 52 - 44 2227 3943

MSA International
Phone 724-776-8626
Toll Free 1-800-672-7777
Fax 724-741-1559
Email msa.international@msafety.com

Offices and representatives worldwide
For further information: