

Vapour Vigilance

Every gas station has fumes and it's up to the vigilant c-store operator to make sure they don't cause a big stink.

GASOLINE FUMES CONTAIN A VOLUME OF VOLATILE organic compounds (VOCs) — including benzene, xylene and toluene — that are proven contributors to smog and suspected of causing cancer. Environmentally, and on a human scale, these VOCs are recognized as a major issue for oil refiners, gasoline distributors and gas retailers. While legislation varies across North America, the effort to contain and recover gasoline vapours has led to new technologies and an industry-led effort to limit the escape of fumes at the various stages of fuel distribution.

"Vapour recovery is an essential part of fuel delivery at the gas station and if you're in the lower mainland of British Columbia, it's a regulated part of the distribution chain," remarks Harry Kitzmann, Pacific region sales and marketing manager for Burnaby-based P.D. McLaren Limited, distributors of OPW vapour recovery products and systems. "Our company provides solutions for owners and operators of gas stations to help them control vapours when tank trucks are dropping fuel into underground tanks."

First Stage Recovery

Control and recovery of volatile vapours occurs in two stages. Stage I recovery typically takes place when gasoline is transported in bulk — from refineries to terminals by pipelines and trains, and from bulk plants to service stations by tanker trucks. At a gas station, Stage I technology captures vapours as underground tanks are being filled. As the tanks are filled with gasoline, vapours in the space above the liquid is returned to the truck where they are stored and returned to the refinery where they are treated and reprocessed into gasoline products. Vapour recovery makes economic sense but the process is ulti-



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Be aware of gasoline vapours and how to recover them.

mately beneficial to the environment. Without Stage I equipment at the gas station, noxious and potentially explosive fumes would be discharged into the atmosphere.

Vapour recovery systems help reduce smog in urban/industrial areas and in Canada, the Greater Vancouver region has legislated that Stage I systems be implemented at retail fuelling depots. According to P.D. McLaren's Harry Kitzmann, vapour recovery is an inexpensive proposition.

"Stage I components have a minimal cost and while the benefits may be negligible to a c-store, the benefits to the environment are huge," states Kitzmann.

P.D. McLaren supplies a line of OPW brand adaptors, that when mated with vapour recovery elbows, return gasoline vapours to the truck during fuel deliveries to underground tanks.

"The OPW 1611 adaptor series is rated at maximum working pressure of 10 pounds per square inch," Kitzmann remarks, "When the vapour recovery

elbow is attached, a sliding valve within the adaptor closes off the normal breathing vent lines and diverts vapour into the tank truck through the vapour return hose."

Recovery System Integrity

Stage II controls essentially address the recovery of vapours from gasoline dispensed at fuelling stations. Equipment for this stage generally consists of pumps with specialized nozzles that capture vapours and return them to the fuel tanks.

In Canada, the natural dispersion of gasoline vapours is considered safe enough for humans and the environment so there are no regulations requiring Stage II recovery anywhere in the country. In the United States, however, Stage II vapour recovery at the gas pumps has been in existence for over 30 years. California first legislated Stage II recovery in the 1970s and since then the idea has spread to other states.

"There is Stage II vapour recovery in the U.S., however, some states are looking at decommissioning their Stage II equipment because of the evolution of on-board refuelling vapour-recovery, or ORVR, systems which have been designed for and installed in vehicles," reports Ed Kubinsky, special projects manager for Pennsylvania-based Crompco, a leading American supplier of compliance testing for underground tanks and lines, and vapour recovery systems.



The OPW 1611 adaptor series is supplied by P.D. McLaren.

Regardless of whether your c-store fuelling station is fitted with both Stage I and Stage II vapour recovery equipment, ensuring the integrity of your system is crucial. According to Crompco's Kubinsky, testing is a cornerstone of preventive maintenance.

"Testing is a critical requirement used to determine if all elements of a vapour recovery system are functioning properly within local regulatory guidelines," he explains. "A malfunctioning system could release unacceptable levels of VOCs into the atmosphere, and create the potential for significant financial loss for the facility owner."

Paying attention to the gasoline vapours emitted at your c-store gas station is a necessary step in your operation because any environmental issue can be economically devastating. Volatile organic compounds need to be mitigated at Stage I and there are new technologies that ensure the safe containment and reclamation of these VOCs.

If the devil is in the details, being aware of gasoline vapours and how to recover them could save your fuel operation from a whirlwind of trouble.