



**Vaporless Manufacturing, Inc.**  
**Quality Petroleum Equipment**  
**Solutions for Over 20 Years**

**Technical Bulletin 060700**

**Manifolded Piping Systems and Leak Detection Solutions**  
*June 7<sup>th</sup>, 2000*

VMI Technical Bulletin 060200 entitled “Mechanical Leak Detectors and Problems Associated with Manifolded Piping” dated June 2, 2000, addresses specific problems encountered when using mechanical line leak detectors with manifolded piping systems. Specifically, the issues of shutting pumps off and preventing additional pumps from turning on when 3 GPH leaks are detected were reviewed.

When using manifolded piping systems, line leak detection must be addressed. The preferred method of doing this is double wall piping, containment sump, sump sensor with shutdown capability, and a catastrophic mechanical line leak detector to provide redundancy and protection during periods when water may infiltrate the sump or the sump sensors may not be operational.

For existing stations that do not have double wall piping, this may be a costly solution.

In those instances, the only feasible method is the use of electronic line leak detection. There are several electronic line leak detection systems being offered today. Almost all of those are limited to use with fractional horsepower turbines (1/3 hp, 3/4 hp, 1 1/2 hp) as flow rates through those leak detectors are restricted. When used with 3 and 5 horsepower pumps, flow rates are radically restricted. This means that conventional electronic line leak systems are rarely compatible for use in truck stops and bulk fueling systems where high volume is needed.

The **VMI PLC-5000** series of electronic line monitor solutions is uniquely designed to deliver full flow from high capacity pumps and has the capacity to automatically stage the start of multiple turbines, provide 3 GPH line leak detection, .2 and .1 GPH testing. . This series incorporates the use of a Central Control Node (CCN) that will control up to four turbines. The **PLC-5012 CCN** is a programming and reporting node that has the capability to automatically stage the start of multiple turbines upon demand.

At authorization of the first dispenser, turbine # 1 starts. When pressure in the line falls below 24 psi, the next turbine is brought on line. Up to 4 turbines may be brought on line in this manner.

The lead turbine may be changed by manually resetting the Master-Slave Select (Option B) switches. This option allows you to change the master turbine to allow quiet time to perform a tank test on a specific tank. It is also possible to incorporate a low level shutoff for each turbine.

By constantly monitoring line pressure, catastrophic line leak detection is provided. In the event a 3 GPH leak is detected, the primary pump is shut down and secondary pump(s) are not allowed to start.

This system requires the use of one LDN (Leak Detector Node) mounted to each turbine. Communication from each LDN at the turbine to the CCN inside the building is accomplished over existing power lines. This results in a simple and fast installation as no additional conduit / wiring is required. Sump sensors may also be monitored with appropriate reporting or shutdown response.

The **PLC-5012** Staged Turbine System monitors continuously for a 3 gallon per hour leak. Testing for monthly monitoring of .2 gallons per hour, and annual line testing, 1 gallons per hour can be activated. An additional benefit is that thermal contraction problems are completely eliminated.

If you have existing **LD-3000** line leak detectors in place, they can be easily modified in the field for use with the **PLC-5000** system.

For information on this or other unique line solutions contact your local distributor or VMI, 800-367-0185.

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