



Process Monitoring: Drawn Sampling

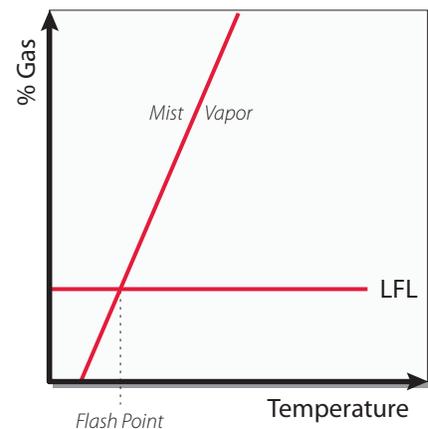
Enclosed spaces, especially closed processes, require an active sample drawing system. Active sampling systems are superior to diffusion-sampling systems because they confirm that a sample is flowing across the sensing element.

Active sampling systems are also more complicated than diffusion systems, because they involve transporting the sample from one point to another. Care must be taken to ensure that the sample is not lost or changed during transportation.

Avoid Condensation

The most common sampling problem is condensation (vapor returning to liquid during sampling). Condensation creates two problems: sample drop-out and clogging. When sample drops out due to condensation, the reading taken by the sensor is lower than actual. And clogging increases downtime and maintenance costs.

The temperature needed to avoid condensation can be found by looking up the Flash Point temperature for each compound in the sample. The Flash Point of each solvent is determined in a laboratory test under fixed conditions: the flash point is that temperature at which a solvent produces sufficient vapor to propagate a flame. Generally, the sample must be kept at or above the flash point temperature to remain in the vapor state during sampling.



Flash Point Temperature
To avoid condensation keep the sampling system above the flash point. At 100% LFL concentration, the flash point is always on the vapor side of the solvent's vapor pressure curve.

Keep Sample Lines Short

Also, the length of the sample delivery line should be kept as short as possible: long lines create critical response-time delays, (in some cases, long sample lines have been the cause of accidents). Long sample lines also can create maintenance problems if delivery lines become clogged.



Keep Sample Lines Short
Sample travels through 1/4 inch tubing at eight feet per second. A long sample line affects the response time of the system.