



## **Contaminant Removal Prior to Analyzer Inlet**

### ***APPLICATION***

Droplets and particulates contained in samples can produce errors in analytical measurement and can adversely affect the capabilities of analyzers. Droplets can be removed by filters or other means, but may require frequent replacement and/or service, entailing maintenance time and materials. Coalescers can also be employed, but may add to sample retention time. Contaminants in the sample may lead to failure of the measurement technology.

High purity hydrogen is used in refineries in hydrotreating units. The hydrogen can contain liquid droplets and other matter, which must be removed prior to measurement with a hydrogen density / specific gravity analyzer.

A recent experience with a hydrogen purity monitor at a Texas refinery required replacing the sensor, resulting in parts and labor expenses as well as associated downtime. Thousands of dollars of lost product, coupled with the analyzer sensor replacement, necessitated a better method of removing liquid droplets and other contaminants.

The solution was the installation of a low maintenance kinetic separator to eliminate the entrained liquid droplets prior to introduction to the analytical measurement cell. The kinetic separator utilizes inertia and kinetic energy of the liquid droplets and particulates for separation from the gas media. By reversing flow, gravity forces the heavier matter to the bottom of the separator, where it may be returned to the process, to a recovery system, or to disposal. The gas is further separated by a second chamber and then may be filtered with internal media in micron ranges. This separation requires no external power or moving parts. Labor costs are minimal due to the simplicity of the unit.

Use of the kinetic separator eliminated the entrained droplets and particulates from the gas stream, rendering the analyzer more effective and achieving greater reliability. Maintenance, including replacement parts and attendant manpower, was greatly reduced.

Gas and liquid separation may be accomplished utilizing the kinetic principle. Applications have included nuclear density, oxygen analysis, and removal of hydrocarbon globules from a liquid stream. Any application involving differences in specific gravities may be accomplished with a kinetic separator. Dual chambers provide efficiency and assure maximum separation of components.

*MTI Analytical Technology* is available to assist with environmental, laboratory, and process monitoring applications. Design, engineering, fabrication, installation, and commissioning may be accomplished, thus assuring integrity and performance of component units.

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### **Call, Fax, or E-mail for Additional Information**

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