On-Site Gas Testing: Gas, Liquid, and Solid Composition & Contamination

Nexo field engineers and analytical experts provide gas testing services on-site in a wide range of applications in order to quickly and accurately obtain real-time contamination information. The Nexo on-site team consists of engineers with experience in industrial settings and expertise in gas testing implementation. Testing can be set up, performed and completed in as little as one day and can also be implemented over several weeks’ time for extensive projects and trials. Extensive testing has been used at several sites with demonstrated success to quantify gaseous, liquid, and solid contaminants and provides valuable information related to inlet contamination, pipeline contamination, separation equipment performance and stream quality.

On-Site Gas Chromatography
To quantify the levels of hydrocarbons and sulfur contamination in a gas stream, a specially equipped GC is brought on-site and utilized. The GC is small, portable, and can be run on-site to generate results in less than 10 minutes after a sample is injected. The device can be used to perform baseline compositional analysis, or frequently measure the removal efficiency of a device or treatment method at varying conditions and optimize those conditions based on the results generated.

The device consists of channels constructed specifically for the separation, detection, and quantification of distinct components within gas streams. Just the standard list of components that can be quantified are presented in the table below. Other components can be quantified upon request after calibration of the device for the specific application.

<table>
<thead>
<tr>
<th>Methane</th>
<th>i-Pentane</th>
<th>n-Pentane</th>
<th>Hydrogen Sulfide</th>
<th>n-Propyl Mercaptan</th>
<th>Dimethyl Sulfide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethane</td>
<td>i-Butane</td>
<td>C6+</td>
<td>Methyl Mercaptan</td>
<td>n-Butyl Mercaptan</td>
<td>COS</td>
</tr>
<tr>
<td>Propane</td>
<td>n-Butane</td>
<td>Carbon Dioxide</td>
<td>Ethyl Mercaptan</td>
<td>t-Butyl Mercaptan</td>
<td>Diethyl Sulfide</td>
</tr>
</tbody>
</table>
Liquids Quantification and Analysis

One of the best ways to assess liquid contamination in a gas stream is to remove and quantify them in a representative slipstream. To achieve this, it is necessary to efficiently remove all liquids from the stream using a high performance coalescer. The best method is to use a nano-fiber Gas Coalescer Test System (GASCO Test System) equipped with ports and features that will allow the removal of 99.9998% of liquids. This separation is completed by contacting the liquids with a specialized formulation of materials and coatings specifically designed to promote total coalescence and liquids discharge.

The GASCO device (picture to the right) has a number of components to measure flow rate, temperature, pressure, differential pressure and liquid buildup levels. The gas stream is contacted with the internal materials that intercepts, coalesces and discharges the liquids into a reservoir for measurement, withdrawal and further analysis.

The GASCO device allows for not only the quantification (and variability thereof) of all liquids entrained in a gas stream; it also allows for the isolation of representative contamination samples that can be used to produce truly accurate analytical results. Nexo offers a suite of laboratory analytical techniques including GC-MS, FT-IR, and many others methods producing results in a very detailed, efficient and timely manner.

Solids Quantification and Analysis

The test system allows for segregation of liquids and solids by separating both contaminants in different and independent stages. Using this method allows any solids to be removed, quantified and characterized (as well as liquids). On-site gravimetric analysis of solid contaminants within the slipstream allows for representative determination of solid loadings and variability over time in the process. In addition, solids can be collected and isolated for further analysis such as FTIR, EDX, XRD, or microscopy with the objective of characterizing its composition, potential source(s), and removal options. This method also can be used for performance evaluations of many filtration systems.

For additional information please contact us at Support@NexoSolutions.com