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CEMS NEWSLETTER

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CEMS MAINTENANCE: (A MULTI-PART SERIES)

We continue our series on CEMS maintenance. This issue covers analyzer maintenance.

Analyzers

Both Dilution and Extractive CEMS utlilize the same types of analyzers. While there are many different brands of analyzers on the market today, many of which utilize different measurement technologies, this editon will take a look at the broad spectrum of maintenance that nearly every analyzer requires for reliable continuous operation.

Quarterly P.M.'s

Quarterly preventitive mainetnance is relatively simple – a few simple inspections and procedures will make a big difference in the longevity of your analyzer:

1. Filters should be changed every quarter. These are typically external in-line filters found on the back of the analyzer.
2. Chassis filters and/or fan screens should be cleaned every quarter to keep dust from accumulating and building up inside the case.
3. Analyzer statuses should be checked. Most modern analyzers have diagnostic readouts that can be used to ascertain problems. Check the statuses of temperature, voltages, coefficients, vacuum and flow to determine problems (i.e. leaks in the system). Leaks often indicate a need to change a capillary, or check the pump diaphram and valves.

In multiple analyzer systems, it's important to initially determine if a problem is with a specific analyzer and not a "system" problem. Usually other analyzers will be affected by a system problem.

Typically, as a pump fails there is an indication in the sample pressure. It's best to check the sample pressure reading every quarter and record it. Drastic changes in the sample pressure are indicative of a failing pump.

Annual Maintenance

Once a year, it's important to take some additional steps to maintain your analyzers in top working order:

1. Rebuild the pump with a diaphram and valve replacement kit. This is inexpensive insurance. Bearings should be inspected also. Instead of replacing bearings, it's easier to simply replace the entire pump.
2. Replace capillary o-rings.
3. Depending on the type of analyzer, the optical bench or reaction chamber should be cleaned. Different processes can cause a build-up to occur on these parts. Where ammonia/urea injection is used, a white build-up can collect in not only the reaction chamber, but also the pump.
4. Clean the heat sinks and vacuum the inside of the analyzer. Dirt accumulation can create chamber instability and signal degradation.

Common Problems

The most common problems among analyzers is with mechanical failure of pumps and moving parts. Proper pump maintenance can keep these problems from becoming catastrophes.

The other common problem with analyzers is the development of leaks. This occurs at the capillary o-rings and in the Silastic tubing internal to the analyzer. Simple replacement resolves these problems.

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