

# STACK MONITORING: IN-SITU VS. EXTRACTIVE

TECHNOLOGY

There are two general approaches to monitoring emissions from stack gases: in-situ analysis or extractive analysis. There are definite pros and cons to both.

In-situ analyzers measure the components of interest directly in the stack, under process conditions.



Extractive systems transport the gas from the stack to the analyzer, and condition the gas to meet the requirements of the analyzer.



**IN-SITU** analyzers do not have filters or other sample conditioning components to maintain.



**EXTRACTIVE** systems can be installed at grade and even inside an instrument shelter; making maintenance easier and safer than in-situ.

**IN-SITU** measures the gas in the stack, under typical process conditions (temperature, pressure, moisture).



**EXTRACTIVE** analysis involves transporting the sample from the stack to the analyzer.

**IN-SITU** need not remove moisture from the sample, reducing the risk of removing water-soluble compounds affecting the "true measurement."



In **EXTRACTIVE** systems the measurement is only as good as the sample. Moisture in the sampling system can be a significant problem.

**IN-SITU** In-situ analyzers are typically lower in cost than an extractive system due to lack of sample conditioning and transport.



**EXTRACTIVE** systems are more complex and costly. They require a sample line from the stack to the analyzer system.

FACTORS



Many factors play a role in determining which option to choose. These include: process conditions, mounting location, regulatory requirements and cost. Knowing the advantages and disadvantages of each can help you determine the correct approach for your application.



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