Application Bulletin

Combustion Efficiency on Condensing Boilers and Furnaces

TEMPERATURE & PROCESS INSTRUMENTS INC

How is Combustion Efficiency Properly Measured on Condensing Boilers and Furnaces?

Combustion efficiency is a measurement of how well any given fuel is being burned and convertedinto useful energy (e.g.: heat).

The calculations are based on 3 MAJOR Factors:

1. Chemistry of the burned Fuel (e.g. Propane, Natural Gas, Oil, etc)
2. The CO2 percentage by volume after the combustion process
3. The NET ΔT temperature between the Stack Gas & the Primary Air being used

NOVO Sereis Portable Combuation Analyzer

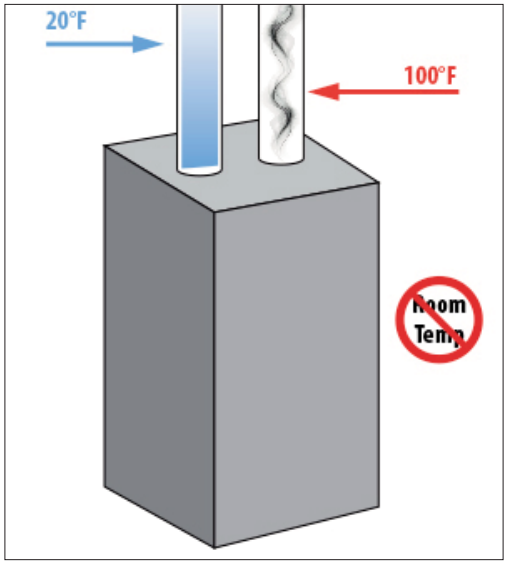
The importance of temperature

Condensing furnaces, boilers, and tankless water heaters use outdoor air as the Primary temperature, for this reason they need a different method of measuring the temperature.

Furthermore, the Stack Temperatures of these systems are much lower than atmospheric systems, so when calculating the Combustion Efficiency with your combustion analyzer properly measuring the correct temperature is of primary importance.

True NET stack temperature

High Efficiency Condensing furnaces/boilers/water heaters need to be tested properly by drilling a hole in the incoming air plastic/ PVC vent pipe (most manufacturer's have dual testing ports already for both incoming air and exhaust, please refer to their specifications of where to test).



In order to obtain an accurate Combustion Efficiency reading, we offer an Air Temperature Probe (AASA08), that can be inserted in the combustion air intake (while simultaneously the standard 12" probe is inserted into the Flue Exhaust Stack). This allows the analyzer to perform the proper calculation using a **True NET Stack Temperature.**

We offer a complete range of HVAC Combustion Analyzers, that suits basically all your analyzer needs. See the NOVO 1 analyzer are compatible to measure properly on condensing, high efficiency systems:

Visit our Web Site at for Complete Specification and Pricing:
https://www.tnp-instruments.com/Novo-1-Two-Gas-Combustion-Analyzer.html

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