

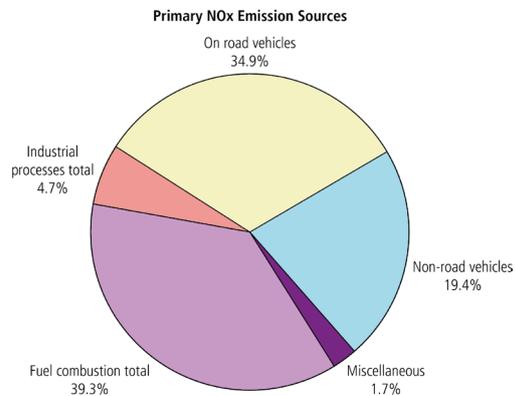
MEASURING NOX IN RESIDENTIAL & COMMERCIAL BOILERS & HEATERS

Low-NOx Heaters are Becoming More Popular as They Reduce Costs, Help Reduce Ozone and Comply With New Strict Regulations

The air that we breathe and use for combustion processes is comprised of 79% Nitrogen and 20.9% Oxygen. In furnaces and boilers running at higher temperatures, oxygen reacts with the nitrogen from the air and the fuel utilized to produce NO and NO₂, which together are called NOx. These highly reactive gases initiate reactions that produce excess ozone, nitrate particles, and acid rain which are harmful to the environment. Burners with lower combustion temperatures produce less NOx which results in fewer emissions into the atmosphere. Additionally, the fuel used in combustion has a direct link to the amount of NOx generated. Coal and Oils have the greatest NOx emission in comparison to Butane, Natural Gas, and Propane. Burner manufacturers in HVAC and industrial processes utilize newer low-NOx technology, providing thermal efficiency improvements of up to 90%, which is why these new types of boilers are becoming increasingly popular and even required in some areas.

Regulations

Since 1971 the US Environmental Protection Agency established legislation requiring areas to ensure average annual NOx levels are minimized. The chart to the right outlines the sources of these NOx emissions. The majority come from fuel combustion processes which include commercial and residential boilers. For industrial processes such as power plants, emission requirements are much stricter. It is only time until these emissions regulations in North America become stricter for HVAC processes, similar to many current European regulations for residential and commercial heating applications. An integral part of meeting these new compliance goals are low NOx burners and boilers. These newer "Green" Eco-Friendly boilers are all low-NOx and must be periodically tested and maintained to maximize thermal efficiency and provide lower NOx emissions.



Solution Control: Si-CA 130/Si-CA 230

In order to improve safety and abide by stricter regulations, high efficiency and Low NOx boilers and burners will continue to be more widespread globally. The installation, repair, and maintenance of this equipment will require specialized tools capable of measuring NOx. The only economic, all-in-one tools are the Sauermann [Si-CA 130](#) and [Si-CA 230](#), capable of measuring O₂, CO₂ and NOx to ensure any high efficiency burner or boiler is operating at its optimal performance.