



## MEASURING EXHAUST GASES FROM FORKLIFT ENGINES

**Many forklift trucks have internal combustion engines that burn propane, natural gas, diesel, or other fossil fuels. A portable combustion gas and emissions analyzer can be used to optimize combustion efficiency and maximize fuel savings, identify and quantify sources that can adversely affect safety and comfort in the work environment, and measure and reduce harmful emissions in the forklift engine exhaust gas.**

### Efficiency

A portable gas analyzer serves as a diagnostic and maintenance tool to quantify how efficiently each forklift engine is running by measuring parameters such as oxygen (for air to fuel ratio) and carbon monoxide. Greater combustion efficiency will result in cleaner combustion, lower fuel consumption, less equipment maintenance, and optimized overall forklift performance while reducing operating costs.

### Safety and Comfort

Significant levels of carbon monoxide in ambient air can cause headaches, fatigue, nausea, and even death in extreme cases. NO<sub>x</sub>, especially NO<sub>2</sub>, can cause respiratory discomfort and problems in addition to creating excess ozone and acid rain. Unburned combustible hydrocarbons can be a safety hazard especially in higher levels that can be ignited. These harmful gases can be monitored in the forklift exhaust gas with a portable emissions analyzer. Lowering emissions and thus improving the ambient air quality will increase the comfort and safety of forklift operators as well as everyone else in the aggregate work environment.

### Emissions Monitoring

Burning fossil fuels in a forklift engine produces combustion by-product gases such as carbon monoxide, oxides of nitrogen (NO<sub>x</sub>), and unburned combustible hydrocarbons that can be environmental and personal health hazards. Measuring forklift exhaust gases allows for accurate emissions monitoring for regulatory compliance and to quantify the forklift's carbon footprint.

### Instrumentation Solution:

Sauermann's [Si-CA 130](#) is a hand-held combustion analyzer for the measurement of O<sub>2</sub> and CO with Calculated CO<sub>2</sub>

Sauermann's [Si-CA 230](#) is a hand-held combustion analyzer for the measurement of O<sub>2</sub>, CO, NO/NO<sub>x</sub>, and C<sub>x</sub>H<sub>y</sub> hydrocarbons with Calculated CO<sub>2</sub>