

# Innovative laser-based gas analytical measurement

## Los Gatos Research (LGR)



Los Gatos Research – a new member of the ABB Group

**Measurement made easy**

Innovative laser-based gas analytical measurement

### Introduction

Los Gatos Research (LGR) adds innovative gas analytical measurement and enhanced laser capabilities to expand ABB's measurement products and services in oil and gas, electric power and other industrial sectors. LGR brings a new line of high-performance gas analyzers to ABB's leading measurement products business.

LGR provides analyzers and services to a wide range of customers (on all seven continents) needing real-time measurement of trace gases and isotopes for research, environmental monitoring and industrial process measurements. Its novel and innovative laser-based measurement strategies allow for non-destructive analysis of gases and liquids continuously and in real time.

LGR complements ABB's existing measurement technology portfolio with a number of new solutions for industrial customers in oil & gas production and transportation, combustion, emissions, power generation and environmental monitoring. Now with ABB, LGR can better serve its customers and further expand its business in the environmental, scientific and industrial markets.

### For more information

Further details of ABB Measurement & Analytics products are available for free download from: [www.abb.com/measurement](http://www.abb.com/measurement)

or by scanning this code:



## One of LGR's most successful products is the Ultraportable Greenhouse Gas Analyzer (UGGA) for accurate measurements CH<sub>4</sub>, CO<sub>2</sub> and H<sub>2</sub>O

### Natural gas leak detection

The Ultraportable Greenhouse Gas Analyzer (UGGA) is ideally suited for fast, sensitive detection of natural gas (coal bed methane, coal seam gas) leaks anywhere. It continuously measures methane, carbon dioxide and water vapor simultaneously. A similar analyzer is available to measure methane and water vapor. UGGA's high sensitivity (ppb levels in 1 second), portability (15 kg), low-power requirement (60 watts on DC power), wide dynamic range (CH<sub>4</sub> up to 10 %) and ease of use allows users to operate the instrument while driving, flying, walking, or even bicycling.

### Soil flux measurements

The new ground-breaking, 'Ultraportable' line of analyzers was designed, in part, for unmanned, continuous chamber-based soil-flux measurements in the field. The analyzer may be used with soil chambers available from a variety of manufacturers.

### The LGR advantage

Based on our unique and patented Off-Axis Integrated Cavity Output Spectroscopy (OA-ICOS), LGR's (cavity enhanced laser absorption based) analyzers provide the ideal combination of small size, low power consumption, high speed (seconds), high sensitivity (ppb), high absolute accuracy, rugged reliability and automated operation required for the most demanding applications. Moreover, the inherent lower cost, and hence higher value, of OA-ICOS is a major benefit to applications which are often budget constrained and often require a network of multiple monitoring sites. LGR analyzers are built on our patented fourth-generation cavity-enhanced laser absorption spectroscopy technique making them more rugged and more accurate. Unlike earlier cavity-enhanced laser absorption spectroscopy techniques like first-generation Cavity Ring Down Spectroscopy (CRDS), our technology eliminates the requirements of sub-nanometer stability of the optics, ultra-precise alignment and stringent thermal control. See the LGR Advantage at <http://www.lgrinc.com/advantages>.

## Success story: UGGA used in Prudhoe Bay Oil Field, Alaska

Prudhoe Bay Oil Field is a large oil field on Alaska's North Slope. It is the largest oil field in both the United States and in North America, covering 213,543 acres (86,418 ha) and originally containing approximately 25 billion barrels (4.0×10<sup>9</sup> m<sup>3</sup>) of oil. The amount of recoverable oil in the field is more than double that of the next largest field in the United States, the East Texas oil field. The field is operated by BP; partners are ExxonMobil and ConocoPhillips Alaska.

### Background

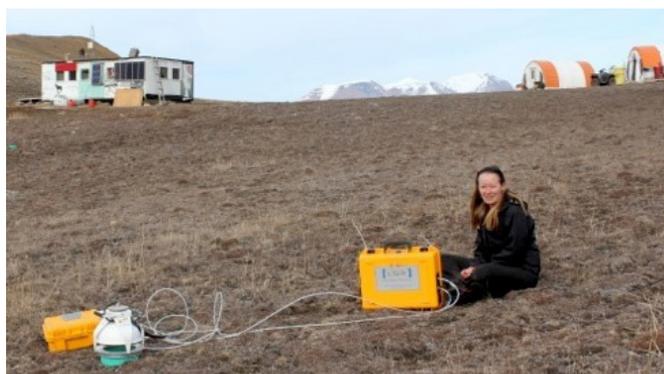
The Prudhoe Bay field is the largest field in North America and the 18<sup>th</sup> largest field ever discovered worldwide. Of the 25 billion barrels of original oil in place, more than 13 billion barrels can be recovered with current technology.



Prudhoe Bay oil field



Ultra-Portable Greenhouse Gas Analyzer provides continuous measurements of  $\text{CH}_4$ ,  $\text{CO}_2$  and  $\text{H}_2\text{O}$  in soil chambers at Prudhoe Bay, Alaska,  $70^\circ19'32''$  N  $148^\circ42'41''$  W using only battery power (photo by United States Geological Survey)



More photos showing the UGGA in operation above the Arctic Circle (on Axel Heiberg Island (Axel Heiberg Island is an island in the Qikiqtaaluk Region, Nunavut, Canada. Located in the Arctic Ocean, it is the 31<sup>st</sup> largest island in the world and Canada's seventh largest island. According to Statistics Canada, it has an area of 43,178  $\text{km}^2$ ).



The sample valve for gas samples is inserted directly into the body of the furnace

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