

# GasFinder benefits for detection of hazardous & toxic gases

HF

Open Path  
Ambient



NH<sub>3</sub>

Stack  
Emissions

H<sub>2</sub>S

CH<sub>4</sub>  
& others

Reliable, Cost-effective  
solutions

BOREAL LASER

# Why Laser Gas Detection?

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- ❑ Very high spectral resolution (<0.01nm)
  - Minimum interference from other gases
  - Linear response over wide measurement range
- ❑ Intense light source
  - High signal-to-noise and rapid response - typically < 1 sec
  - Long path lengths possible (to 1000m)
  - Very sensitive – ppm to ppb levels
- ❑ Lasers available throughout NIR
  - Can be used with many gases
- ❑ Solid state technology
  - Robust and reliable in all climates
  - No consumables and minimal maintenance
- ❑ Can be used with fibre optics
  - Multi-path capability reduces cost per measurement

# Specific GasFinder features

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- ❑ Built-in, stable calibration reference cell
  - Ensures GasFinder system stays in calibration.
  - Regular calibration cell checks eliminate zero and span drift
  - No consumables and no maintenance required
- ❑ “No Phase Adjustment” detection technology
  - Vary path length with no electronic adjustments
  - No special expertise required to operate
- ❑ Extensive self diagnostics
  - System health parameters continuously monitored
  - Immediate reporting of any warning or error conditions

# Benefits for Open-Path Monitoring

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- ❑ Built-in calibration
  - No field calibration required
- ❑ No interference from H<sub>2</sub>O or CO<sub>2</sub> or other gases
  - Longer path lengths possible (up to 1km)
  - Specific to gas of interest (e.g. HF, H<sub>2</sub>S, NH<sub>3</sub>, CH<sub>4</sub>)
- ❑ GasFinder is small, light, battery operated
  - Truly portable system – easy to set-up and use
  - Measurement programs can be completed quickly
- ❑ Fast response time
  - Enables measurement of transients
- ❑ GasFinderMC measures up to 8 paths with one analyzer
  - Economic perimeter monitoring of facilities and process units

## Why GasFinder is better than Open Path IR/UV

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- ❑ Very high resolution means GasFinder more selective
  - Laser diode picks out an individual gas absorption line
  - IR and UV measure many lines over wide wavelength range
- ❑ Therefore GasFinder does not suffer from the interferences that affect open path IR and UV
  - H<sub>2</sub>O and CO<sub>2</sub> (which cause interference in IR detectors)
  - Hydrocarbons in oil & gas related activities (UV & IR)
- ❑ Intense Laser light concentrated at specific wavelength
  - Enables longer range - to 1000 m
  - Penetrates fog and steam better

# Benefits for Stack Monitoring

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- ❑ Optical measurement technique
  - Direct measurement of stack gas concentrations
- ❑ In-situ measurements possible
  - Removes uncertainties introduced by sample systems
  - Especially important for reactive gases (HF, HCl, NH<sub>3</sub>)
- ❑ Very high resolution
  - Better selectivity hence less interference from H<sub>2</sub>O & CO<sub>2</sub>
- ❑ Very fast response time (1 second)
  - Enables correlation of high emission levels with process conditions and parameters – leading to process optimization
- ❑ GasFinderFC enables portable stack measurements
- ❑ GasFinderMC monitor multiple stacks with single analyzer

## Some gas sensitivities

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Gas	Sensitivity (ppm-m)	10m path (ppm)	100m path (ppm)	1000m path (ppm)
HF	0.1	0.01	0.001	0.0001
NH <sub>3</sub>	1	0.1	0.01	0.001
H <sub>2</sub> S	20	2	0.2	0.02
CH <sub>4</sub>	1	0.1	0.01	0.001
CO <sub>2</sub>	500	50	5	0.5
HCN	1	0.1	0.01	0.001
HCl	0.3	0.03	0.003	0.0003
C <sub>2</sub> H <sub>2</sub>	0.2	0.02	0.002	0.0002

# Countries with GasFinder installations

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- ❑ Canada
- ❑ United States
- ❑ Brazil
- ❑ Iceland
- ❑ United Kingdom
- ❑ Holland
- ❑ France
- ❑ Spain
- ❑ Italy
- ❑ United Arab Emirates
- ❑ South Africa
- ❑ Mozambique
- ❑ Australia
- ❑ New Zealand
- ❑ Thailand
- ❑ Germany
- ❑ Norway

## Selected Clients

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- ❑ ExxonMobil
- ❑ Shell
- ❑ BP
- ❑ Conoco Phillips
- ❑ Dupont
- ❑ Honeywell
- ❑ US Dept of Agriculture
- ❑ Agriculture & Agri-Foods  
Canada
- ❑ Alcoa
- ❑ Alcan
- ❑ Dubai Aluminium
- ❑ Aluminium Pechiney
- ❑ Gaz de France
- ❑ Transcanada Pipelines
- ❑ BHP Billiton
- ❑ Tomago Aluminium
- ❑ Hydro Aluminium