



FluxSense

MEASUREMENTS MAKE SENSE



FLUXSENSE PRODUCTS & SERVICES





FluxSense employs state-of-the-art optical techniques and instrumentation for diverse applications. These encompass air quality assessments, emissions measurements and monitoring, leak searches, source mapping, health and safety evaluations, environmental regulation and enforcement, community monitoring, as well as climate monitoring and modelling

BACKGROUND

Gas emissions from anthropogenic (man-made) and biogenic (natural) sources contribute to a large range of environmental problems such as climate change, ozone depletion, air pollution, photochemical smog, acidification and eutrophication. In addition, some compounds are also a health and safety concern because they are toxic or flammable. Furthermore, leaking high quality gas products from a facility can be economically costly.

Knowledge about the actual emissions and concentrations are crucial for efficient regulations and abatement measures. This can only be achieved by recurring measurements. Diffuse (non-channeled) emissions from large facilities have, historically, been cumbersome and expensive to measure. Hence, these emissions have often been based on models or inventory estimates/calculations, thus not capturing true

emissions. Non-ideal or malfunctioning equipment or incorrect algorithms or input parameters can give vastly misleading results. Measurements give a better understanding of the real emissions and the actual state/performance of a facility.

FluxSense develops state-of-the-art techniques and instruments to measure diffuse emissions for an ever broader range of relevant gases. All of FluxSense's measurements are fully mobile, enabling real-time mapping of emissions and concentrations both within and around facilities in a cost-effective manner.

Our techniques are BAT (best available techniques) and included in the new European standard for refinery VOC emissions (EN17628).

KNOWLEDGE ABOUT THE ACTUAL EMISSIONS AND CONCENTRATIONS ARE CRUCIAL FOR EFFICIENT REGULATIONS AND ABATEMENT MEASURES

WE MAKE SENSE OF MEASUREMENTS

ABOUT US

FluxSense AB was started in 2001 to fill a need for reliable diffuse emissions measurements for the petroleum and petrochemical industry as a spin-off company from Chalmers University of Technology in Gothenburg on the Swedish west coast. The Swedish headquarters is accompanied by a Californian subsidiary and agents in South Korea and China.

FluxSense is the governor of the Solar Occultation Flux (SOF) technique and provides complementary techniques such as SkyDOAS, MeFTIR and MeDOAS for an extended range of gas species. We deliver fully integrated solutions from measurement to reporting.

FluxSense has conducted measurement campaigns of industrial and agricultural emissions in Europe, America and Asia using self-developed state-of-the-art optical techniques for gas emission measurements and leak search. Since 2015 we also provide instrument products and customer solutions such as Mobile Labs and Monitoring Stations.



LEAKAGE OF HIGH QUALITY GAS PRODUCTS FROM A FACILITY CAN BE ECONOMICALLY COSTLY.



EMISSION QUANTIFICATION (FLUX)

Emissions (kg/h) from a target source/facility can efficiently be quantified by the SOF and SkyDOAS techniques directly or by combining SOF with MeFTIR or MeDOAS measurements to get the gas species of interest.

The techniques are fully scalable, from single point sources, via total facilities to large-scale industrial conglomerates. Emissions are assessed by sampling the plume downwind of the source and simultaneously logging local wind speed and direction. Quantifying emissions for an entire facility can typically be executed from the fence-line distance, eliminating the need for site access.

Emission quantification of confined sources can also be performed using MeFTIR/MeDOAS and tracer gas release. Knowing the actual emissions, as compared to estimates or model outputs, is the key for efficient emission control and abatement.

LEAK SEARCH

FluxSense instrumentation provides an efficient way of screening leaks or hot-spots of a facility. Column integrating techniques, such as SOF and SkyDOAS, catches leaks at all altitudes while MeFTIR and MeDOAS samples at ground level. Since the instruments are truly mobile, a facility can very quickly be mapped and any leaks will be pin-pointed by observing real-time concentration/column enhancements while driving downwind of a source. Then, if necessary, detail leak search with IR-camera, a hand-held sensor or a suction hose connected to MeFTIR/MeDOAS can take over to identify the leaking installation/part.

Regular leak-search, using only an IR-camera or a handheld sensor is extremely time-consuming and can easily miss distant or elevated large leaks. Efficient leak search with FluxSense techniques requires site-access but the general picture can often be obtained from the measured plume shape at fence-line measurements. Efficient leak search is crucial for emission reductions that saves both money and the environment and mitigates risks.





AIR QUALITY MONITORING

The MeFTIR and MeDOAS instruments were initially designed for mobile and survey use but can easily be transformed into 24/7 monitoring stations for air quality. FluxSense can provide software and infrastructure for automated stations with real-time monitoring. These stations enable studies of diurnal (day-and-night) variabilities and seasonal effects of air quality parameters.

» **REAL-TIME SOFTWARE PLOTS MEASUREMENT DATA ON MAPS OR AERIAL IMAGERY WHICH GIVES IMMEDIATE FEEDBACK ON AIR QUALITY AND SOURCE LOCATION**

CONCENTRATION MAPPING

Mobile extractive measurements with MeFTIR and MeDOAS can be used to map ground level gas concentrations at a site or surrounding communities. This is a powerful tool for finding areas or enhancements of elevated concentrations of toxic substances and their impact on human exposure. Fence-line mapping can aid authorities in their health & safety regulations and facility owners to understand their local impact. The FluxSense software plots concentration maps in real-time which gives immediate feedback on air quality. Concentration mapping can also be used to calibrate or validate air quality models.



CUSTOMERS

FluxSense always provides standardized measurements, a quality approved data analysis and a full custom report for internal or external use. We have long experience of safe operations in complex facilities and work in close cooperation with the customer to optimize the usefulness of the data.

FluxSense customers include private companies, local authorities, state agencies, organizations, universities and research institutes.

PETROCHEMICAL INDUSTRIES

FluxSense has worked with petrochemical sites around the world in order to measure their total VOC emissions and to identify any hot-spots or leaks. The customer benefits from knowledge about their emissions and any significant leaks. With appropriate directed measures this can be used for efficient emission reductions which saves money and the environment and mitigates risks. Industrial VOC emissions relates to several important issues such as air quality, climate change and health & safety.

OIL & GAS PRODUCTION

FluxSense has the ability and experience to measure emissions of VOCs from all chains in oil & gas production, from offshore platforms or single pump jacks, via storage- and treatment facilities to large oil fields or refinery complexes. The Mobile Lab is our standard platform but we are flexible to also perform measurement by boat or drone-assisted measurements. Large refineries are usually heavily regulated. In comparison, a study in California 2015 showed aggregate emissions from small, less regulated, can be of

comparable or even dominating scale.. This is important information for cost-effective measures to reduce emissions.

LANDFILLS

The Tracer Correlation method using the MeFTIR instrument can be used to measure methane (CH₄) emissions from landfills. Methane is a powerful greenhouse gas and knowledge about the emissions are important for effective mitigation measures and for accurate input to climate models. FluxSense has measured methane emissions at several landfills during two decades to study time trends and the expected decay of emissions at final covered and active sites.

FARMS AND AGRICULTURE

Biogenic emissions of ammonia (NH₃), nitrous oxide (N₂O) and methane (CH₄) from farms can be quantified using SOF and MeFTIR measurements. Knowing these emissions is important for many environmental problems including climate change, aerosol formation, eutrophication or acidification. FluxSense has been involved in several farm emission studies of cattle and pig farms in North America and Europe.

WATER TREATMENT PLANTS

Water and sewage treatment plants are important emitters of methane (CH₄) and nitrous oxide (N₂O) which are both strong greenhouse gases. FluxSense can measure emissions and make concentration mapping of both these gases using MeFTIR and Tracer Correlation methods both from ground based and drone platforms. The results can be useful for effective emission reduction and to avoid public concerns regarding smell.

POWER PLANTS

SkyDOAS is a great instrument for monitoring combustion emissions from power plants since it measures Sulphur dioxide (SO₂), nitrogen dioxide (NO₂) and formaldehyde (HCHO) simultaneously. All these gases are highly relevant to air quality and are under legal regulations in many places. FluxSense has conducted measurements of Power Plants during several campaigns world-wide and can, provide emission quantification remotely (at fence-line distance) and cost-effective.

FLARES

FluxSense has conducted many emission studies of single flares at petrochemical plants or refineries in order to quantify their emissions and combustion efficiency. Since flares are known to give temporary high emissions of VOCs if poorly operated, our measurements can provide critical input for better control of flare emissions. We use a range of different optical techniques, such as SOF, drone assisted MeFTIR or Thermal FTIR for this.

STORAGE & TERMINALS

Emissions from individual tanks can increase by orders of magnitude due to ruptured sealings or malfunctioning valves. We have also seen methane leaking thru the concrete walls of LNG tanks. Our instruments will efficiently identify and quantify such deviations so the customer can take appropriate measures.



OUR TECHNOLOGY



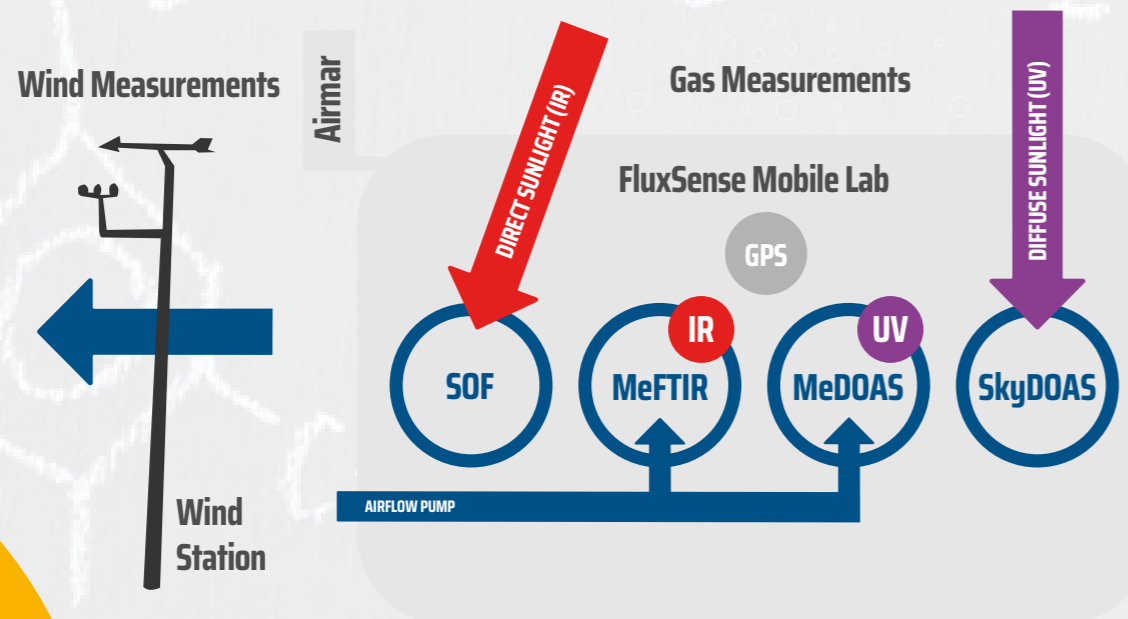
FluxSense is using a spectrum of in-house optical methods for different gases and purposes...



WE USE A RANGE OF OPTICAL TECHNIQUES/METHODS FOR GAS MONITORING AND EMISSION QUANTIFICATION

We use both passive techniques (SOF and SkyDOAS) with external light sources (direct and scattered Sunlight respectively) and active techniques (MeFTIR and MeDOAS) with internal light sources (lamps). SOF and SkyDOAS are categorized as remote (non-invasive) while MeFTIR and MeDOAS are extractive.

Furthermore, different measurement geometries implicate different primary quantities and units, where SOF gives slant atmospheric mass column (mg/m^2), SkyDOAS vertical atmospheric mass column (mg/m^2) and MeFTIR and MeDOAS local concentrations (mg/m^3 and ppb). They use also different part of light spectra; SOF and MeFTIR are operating in the infrared (IR) and SkyDOAS and MeDOAS are sensitive to visible and UV light.



METHODS SUMMARY

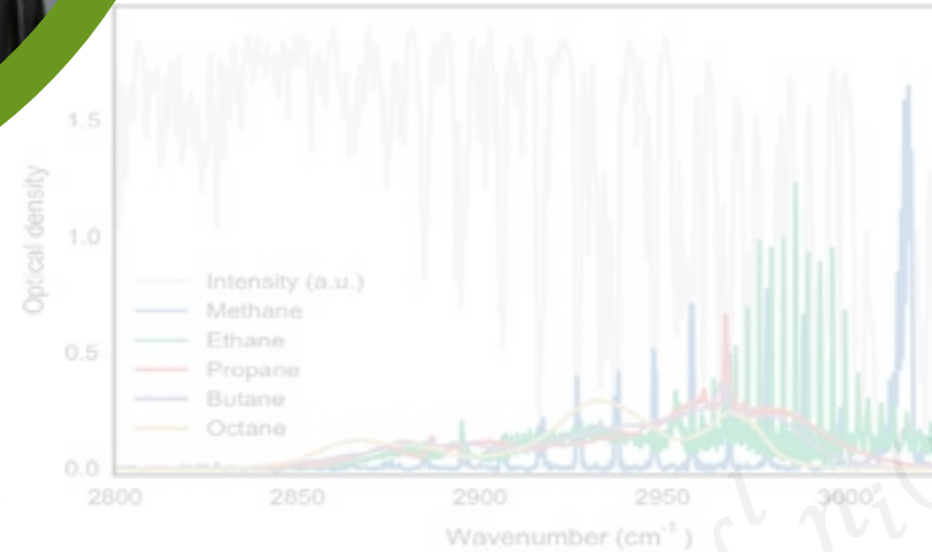
METHOD	SOF	SkyDOAS	MeFTIR	MeDOAS
TYPICAL COMPOUNDS	Alkanes: ($\text{C}_n\text{H}_{2n+2}$) Alkenes: C_2H_4 , C_3H_6 NH_3 , Styrene 1-3-Butadiene	SO_2 NO_2 H_2CO	CH_4 Alkanes: ($\text{C}_n\text{H}_{2n+2}$) Alkenes: C_2H_4 , C_3H_6 NH_3 N_2O or C_2H_2 (tracer) H_2CO	BTEX Styrene SO_2 Naphtalene
SPECTRAL REGION	IR	UV	IR	UV
TYPE	Passive, Remote Sensing	Passive, Remote Sensing	Active, Extractive	Active, Extractive
MEASURED QUANTITY [UNIT]	Integrated slant column mass [mg/m^2]	Integrated vertical column mass [mg/m^2]	Mass concentration at vehicle height [$\mu\text{g}/\text{m}^3$]	Concentration at vehicle height [$\mu\text{g}/\text{m}^3$]
REFERENCE	Relative Background	Relative Background	Relative Background	Relative Background
DERIVED QUANTITY [UNIT]	Mass Flux [kg/h]	Mass Flux [kg/h]	1) Mass concentration ratio of ground plume combined with SOF gives Indirect Flux [kg/h] and plume height information [m] 2) Mass flux [kg/h] via tracer release	Combined with MeFTIR and SOF gives Indirect Flux [kg/h]
COMPLEMENTARY DATA	Vehicle GPS-coordinates, Plume wind speed and direction	Vehicle GPS-coordinates, Plume wind speed and direction	Vehicle GPS-coordinates, Plume wind direction	Vehicle GPS-coordinates, Plume wind direction

CONDITIONS AND LIMITATIONS

	SOF	SkyDOAS	MeFTIR	MeDOAS
Day	✓	✓	✓	✓
Night			✓	✓
Clear sky	✓	✓	✓	✓
Haze/Cirrus	✓	✓	✓	✓
Overcast		✓	✓	✓
Patchy Clouds	✓		✓	✓
Light Rain/Snow			✓	✓
Heavy Rain/Snow				✓



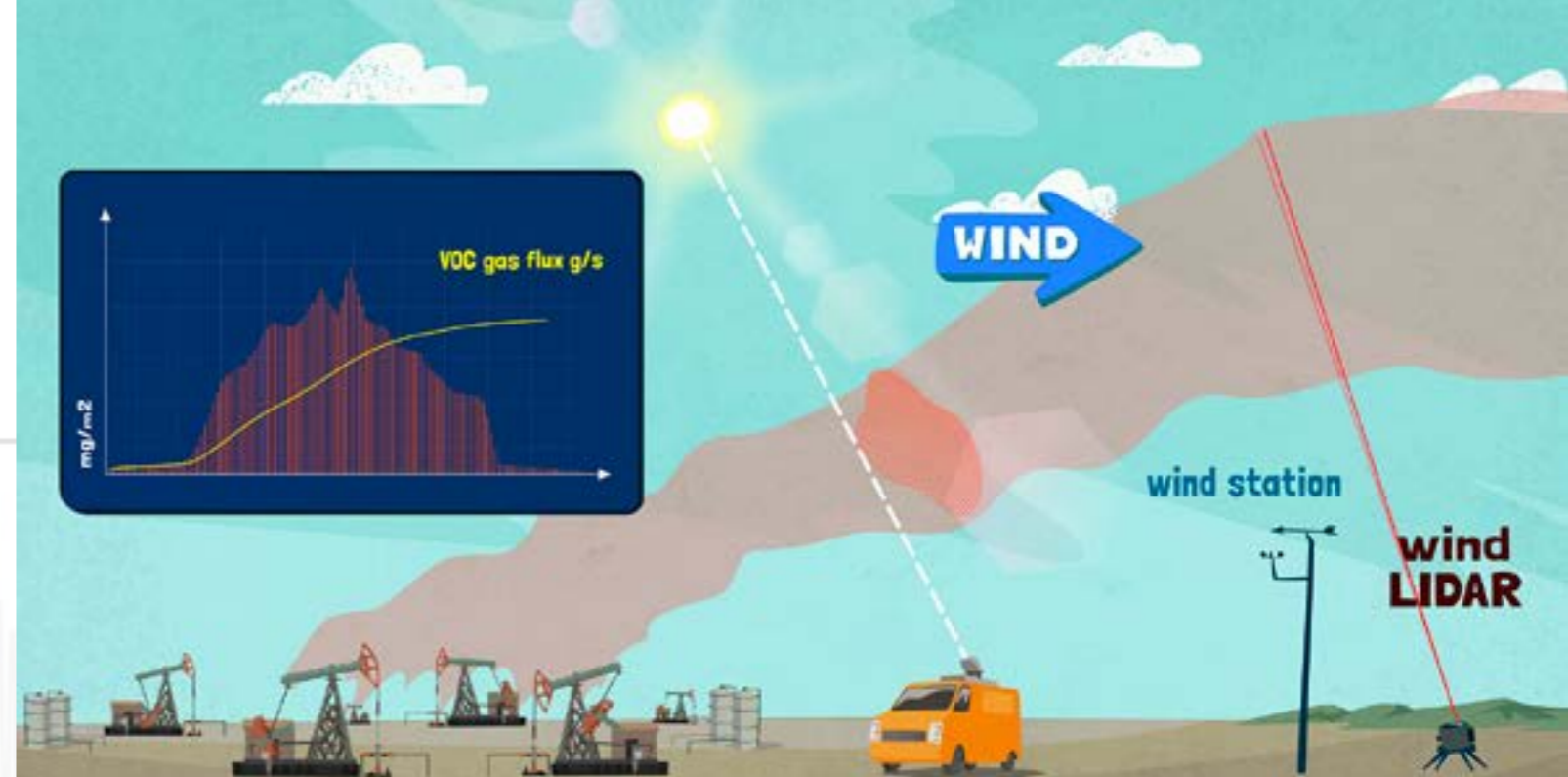
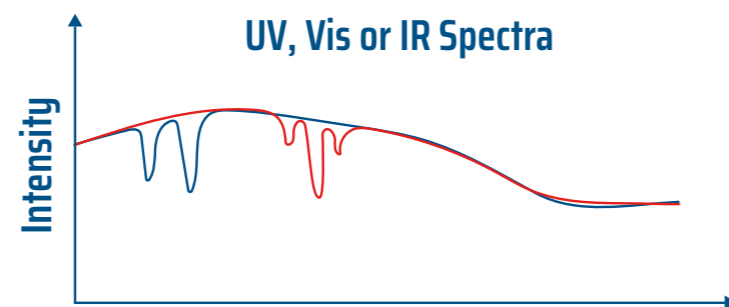
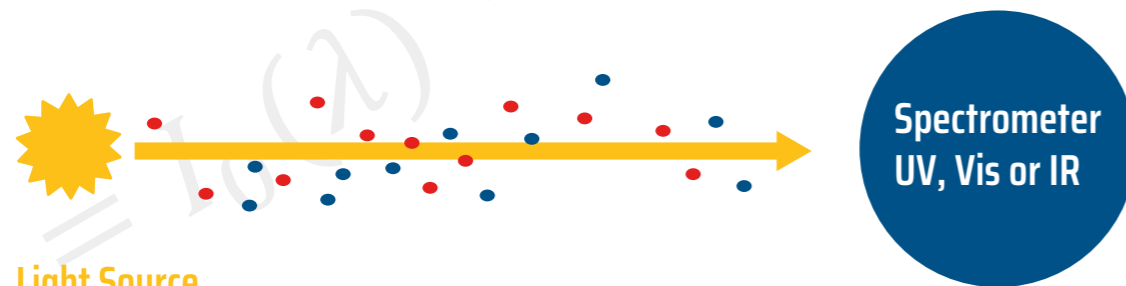
” ALL OUR METHODS ARE SPECTROSCOPICAL AND BASED ON PUBLISHED CROSS SECTIONS. HENCE, THEY DO NOT DEPEND ON ANY EXTERNAL CALIBRATIONS.



SPECTROSCOPY

What unites all our methods are absorption spectroscopy where the concentration of a specific gas along the measurement path (i.e. from the light source to the sensor) can be deduced from the amount of absorbed light for the specific gas.

Since gases have unique spectral absorption features, different gases can be separated if the sensor has sufficient spectral resolution. Gas molecules have strong absorption features in defined regions (due quantum physics characteristics), that's why we need different sensors/instruments to analyze a broad range of gases.



DIRECT EMISSION MEASUREMENTS

The Solar Occultation Flux (SOF) and Sky Differential Optical Absorption Spectroscopy (Sky-DOAS) methods are used to map and quantify gas emissions from the large industrial conglomerates down to individual sources. The measurements are generally carried out by measuring around the perimeter of the emission sources, making it possible to subtract the upwind component from the downwind measurement after combining the respective path integrated concentrations with wind information to determine gas fluxes.

SOF

The SOF technique is dependent on direct sunlight. SOF monitors solar radiation over a broad spectral IR region for the detection and quantification of emissions of the specified gases. By driving downwind of the sources, and intersecting the plume with the measurement path, an integrated concentration profile is obtained. SOF is patented by FluxSense and is considered Best Available Technology in the most recent European BREF document for refineries. The method is standardized according to EN17628.

SKYDOAS

The SkyDOAS technique is dependent on zenith scattered sunlight (sky-light). SkyDOAS monitors solar radiation in the UV region for the detection and quantification of emissions of the specified gases. The SOF technique uses DOAS-UV spectrometry to analyze sunlight passing through the atmosphere and detected from a mobile system. By driving downwind of the sources and intersecting the plume with the measurement path, an integrated concentration profile is obtained.

EXTRACTIVE CONCENTRATION MEASUREMENTS

The Mobile extractive Fourier Transfer Infra-Red (MeFTIR) and Mobile extractive Differential Optical Absorption Spectroscopy (MeDOAS) methods are used to measure and map the gas concentrations (ppb or $\mu\text{g}/\text{m}^3$) at ground level from various sources. They are able to efficiently screen large areas for hotspot or leaks.

MEFTIR

The MeFTIR technique is essentially an internal lamp, a multi-reflection cell and an FTIR-spectrometer. MeFTIR monitors IR-radiation over a broad spectral IR region for the detection and quantification of a range of VOCs and other gases inside the cell.

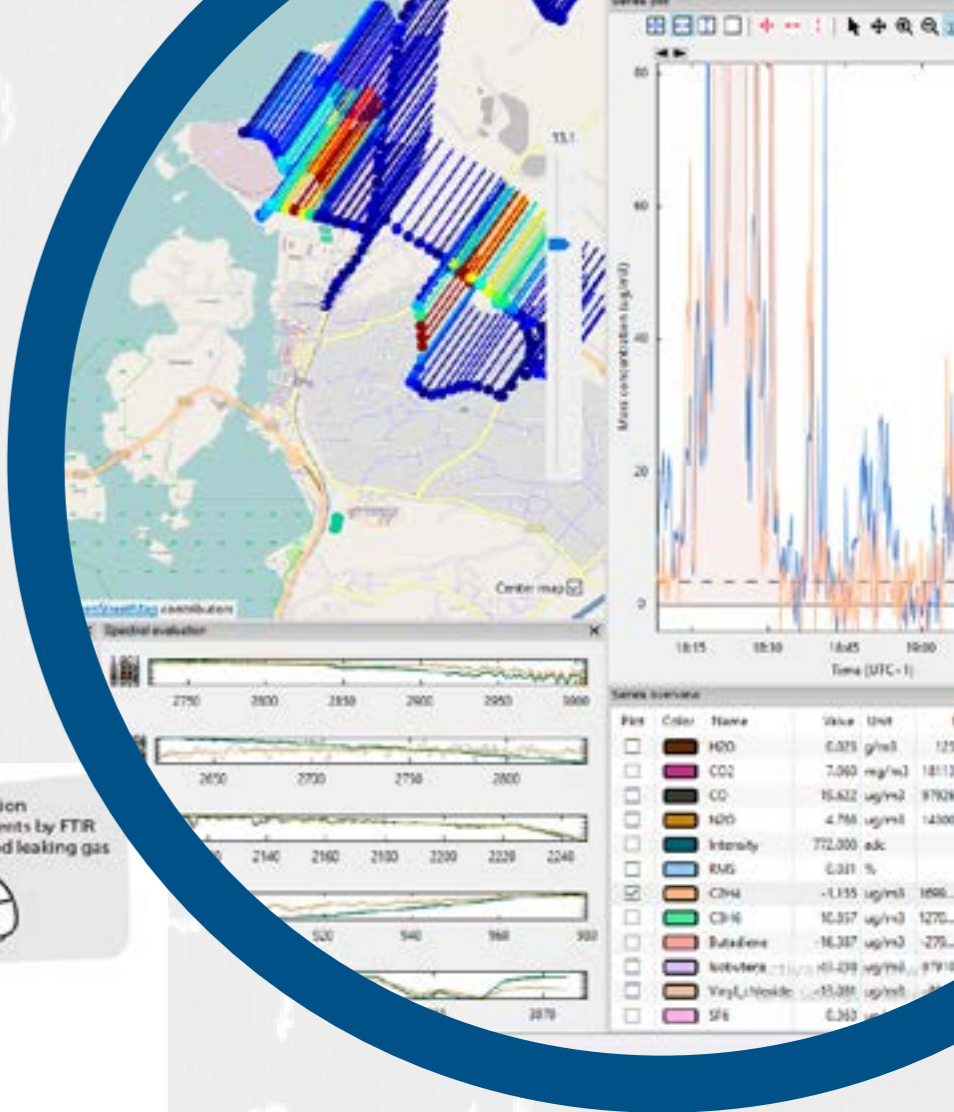
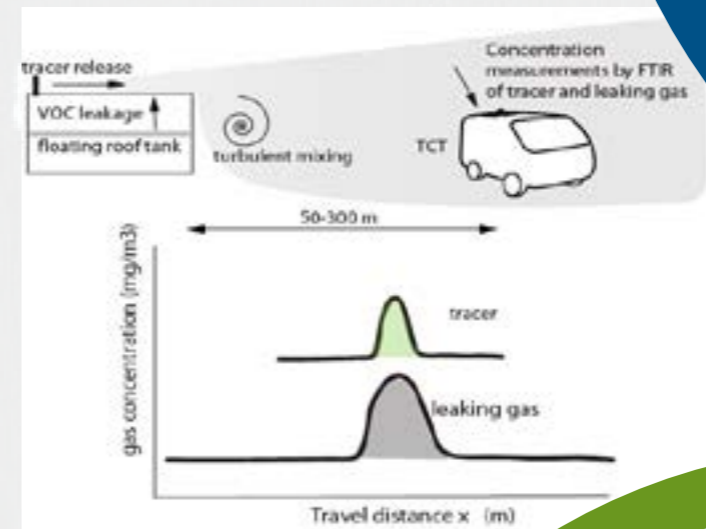
MEDOAS

The MeDOAS technique is essentially based on an internal lamp, a multi-reflection cell and an UV-spectrometer. MeDOAS monitors UV-radiation over a broad spectral UV region for the detection and quantification of BTEX (Benzene, Toluene, Ethylbenzene, Xylene) and other gases inside the cell.

TRACER CORRELATION

The Tracer Correlation (TC) method is used for quantification of gas emissions from individual sources using MeFTIR and MeDOAS measurements. TC relies on the controlled release of a known rate of a tracer gas. From the known release rate of the tracer gas (kg/h) and the measured mass concentration ($\mu\text{g}/\text{m}^3$) in the emission plume of both the tracer gas and the source gas, the emission rate of the source gas can be retrieved. The method is standardized according to EN17628.

” OUR METHODS ARE ABLE TO EFFICIENTLY SCREEN LARGE AREAS FOR HOTSPOT OR LEAKS.



PRODUCTS

FluxSense has developed four state-of-the-art instrument systems for gas measurements; SOF, SkyDOAS, MeFTIR, MeDOAS.

They can be ordered with different setups and adapted/customized on requests. Instruments can be order individually or as a complete customer solution with all necessary auxiliary equipment and software.

Contact us for a quote...



MeDOAS

The MeDOAS (Mobile extractive Differential Optical Absorption Spectroscopy) instrument system is designed to measure gas concentrations of BTEX and other gases in the extracted air using internal UV-light. The system consists of a Main Unit with a multi-pass Optical Reflection Cell mounted in a temperature-controlled enclosure and a separate Spectrometer Unit. The system also includes vibration dampers, valves, hoses, air pump and mounting beams and IT-infrastructure (GPS-receiver, computer and monitor).

NOTE:
The MeDOAS system can be mounted on a mobile platform (vehicle) or in a stationary indoor space.



MeFTIR

The MeFTIR (Mobile extractive Fourier Transform Infra-Red) instrument system is designed to measure gas concentrations of VOCs and other gases in the extracted air using internal IR-light. The system's Main Unit consists of an FTIR-spectrometer and a multi-pass Optical Reflection Cell mounted in a temperature-controlled enclosure. The system also includes vibration dampers, valves, hoses, air pump and mounting beams and IT-infrastructure (GPS-receiver, computer and monitor).

NOTE:
The MeFTIR system can be mounted on a mobile platform (vehicle) or in a stationary indoor space.



SPECIFICATIONS (standard configuration)

	MeDOAS	MeFTIR
Units (version)	MeDOAS Main Unit Spec. Unit -L	MeFTIR Main Unit
Measurement Principle	Active, Extractive Multi-Reflection Cell	Active, Extractive Multi-Reflection Cell
Measured Quantity (Unit)	Concentration in Optical Cell (ppb)	Concentration in Optical Cell (µg/m³)
Light Source	Internal UV-lamp (Xe)	Internal IR-lamp
Calibration Source	Internal Pb Hollow Cathode Lamp	-
Optical Path Length	100-118m	100-118m
Flow Rate	120 l/min	120 l/min
Spectrometer Model	Czerny Turner Grating Spectrograph	Fourier Transform Infra-Red (FTIR)
Detector Type	CCD, Peltier Cooled	Dual (InSb/MCT), LN2-cooled
Spectral Range	UV, 250-275 nm	Mid-IR: 750-4000 cm ⁻¹ (3-13 µm)
Spectral Resolution	0.15 nm	0.5 cm ⁻¹
Standard Species & Detection Limits (ppb)	Benzene (1) Toluene (2) Ethylbenzene (4) p-Xylene (1)	Total Alkanes, Butane Equivalents (5) Methane, CH ₄ (15) Ethylene, C ₂ H ₄ (10) Ammonia, NH ₃ (5) Nitrous Oxide, N ₂ O (2) Acetylene, C ₂ H ₂ (5)
Additional Species	Ozone, Sulphur Dioxide, Furfural, Paracresol, Phenol, Naphtalene, Styrene, Trimethyl Benzene, SO ₂	Propylene, Sulphur Hexafluoride, Hydrogen Cyanide, 1-3 Butadiene, Acetaldehyde, Carbonylsulfide, Formaldehyde, Methanol, Ethanol, Acrylonitrile, Carbon Tetrafluoride, Carbon Monoxide, Methyl Bromide
Sampling Time	4 - 10 s	4-10 s
Dimensions W x H x D	450 x 400 x 1750 mm - Main Unit 612 x 405 x 322 mm - Spec. Unit -L	450 x 600 x 1750 mm
Weight (kg)	112 kg - Main Unit 36 kg - Spec Unit	120 kg
Housing	Powder Coated Aluminium	Powder Coated Aluminium
Operational Environment	Temperature: 5-35 deg C Relative Humidity: 0-90%	Temperature: 5-35 °C Relative Humidity: 0-90%
Intern Temp. Regulation	Heating Plates	Heating Fans
Vibration Suppression	Pneumatic Mounts	Pneumatic Mounts
Supply Voltage	100-240V AC, 50/60 Hz	100-240V AC, 50/60 Hz
Nominal Power	520 W (with no inlet heater)	466 W (without inlet heater)
Data Interface	USB-B	Ethernet (RJ45)
Software	FluxMeasure, FluxCtrl, FluxReport	FluxMeasure, FluxReport, FluxControl
Main Accessories	Measurement Computer, Optical Fiber, GPS Receiver, Inlet Heater, Particle Filter (Cyclone), Spare Parts & Tool Kit	Measurement Computer, GPS Receiver, Vacuum Pump, Inlet heater, particle filter, GPS receiver, Vibrational Mounts, Spare Parts & Tool Kit, Alignment Kit, Liquid Nitrogen Dewar



SkyDOAS

The SkyDOAS (Sky Differential Optical Absorption Spectroscopy) instrument system measures atmospheric emissions (flux) of SO₂, NO₂ and HCHO using zenith-scattered solar UV-light. The system consists of a UV-Spectrometer Unit and a zenith sky Telescope.

The system also includes a control unit and an optical fiber and IT-infrastructure (GPS-receiver, computer and monitor).

NOTE:
The SkyDOAS system requires a mobile platform (vehicle) with zenith sky access of the sky Telescope.



SOF

The SOF (Solar Occultation Flux) instrument system is designed to measure gas emissions (flux) of VOCs and other gases using direct solar IR-light. The system consists of an IR-spectrometer and a 360° Solar Tracker mounted on an Optical Platform.

The system also includes, control units, damping cushion and a lifting pillar. IT-infrastructure including GPS-receiver, computer and monitor is included.

NOTE:
The SOF system requires a mobile platform (vehicle) with direct solar access for the Solar Tracker.



SPECIFICATIONS (standard configuration)

	SkyDOAS	SOF
Units (version)	SkyDOAS Telescope Spec. Unit -S SkyDOAS Control Unit	Main Unit incl Solar Tracker Solar Tracker Control Unit and Remote Control
Measurement Principle	Passive, Open Path	Passive, Open Path
Measured Quantity (Unit)	Vertical Path Integrated Concentration (mg/m ²)	Slant Path Integrated Concentration (mg/m ²)
Light Source	Zenith Sky (Scattered Sunlight)	Sun
Calibration Source	Internal Hg-lamp	-
Spectrometer Type	Czerny-Turner Grating Spectrometer	Fourier Transform Infra-Red (FTIR)
Detector Type	CCD	Dual (InSb/MCT), LN ₂ -Cooled
Spectral Range	UV: 290 - 390 nm	Mid-IR: 750-4000 cm ⁻¹ (3-13 μm)
Spectral Resolution	0.44-0.64 nm	0.5 (cm ⁻¹)
Standard Species & Detection Limits (ppb)	Sulphur Dioxide - SO ₂ (7) Nitrogen Dioxide - NO ₂ (5) Formaldehyde - H ₂ CO (5)	Total Alkane mass (2) Ethylene (1) Propylene (2) Ammonia (0.5)
Additional Species	-	1-3-Butadiene, 1-Butene, Methanol, Ethanol, Vinylchloride, Sulphur Hexafluoride, Styrene
Sampling Time	1-5 s	2-5 s
Dimensions W x H x D	55 x 55 x 250 mm - Telescope 304 x 462 x 370 mm - Spec Unit - S 130 x 160 x 70 mm - Control Unit	600 x 400 x 450 mm (Main Unit) 200 x 170 x 100 mm (Control Unit)
Weight	0.9 kg - Telescope 17 kg - Spec Unit -S 1.2 kg - Control Unit	33 kg Main Unit 3 kg Control Unit
Housing	Powder Coated Aluminium	Powder Coated Aluminium
Operational Environment	Temperature: 5-35°C Relative Humidity: 0-90%	Temperature: 5-40°C Relative Humidity: 0-90%
Intern Temp. Regulation	Cooling (Peltier Element)	-
Vibration Suppression	Rubber Mounts	Pneumatic Damping Cushion
Supply Voltage	100-240V AC, 50/60 Hz, & 10-14V DC	100-240V AC, 50/60 Hz, & 10-14V DC
Nominal Power	70 W	90 W
Data Interface	USB-B / Ethernet (RJ45)	Ethernet (RJ45)
Software	FluxMeasure, FluxReport	FluxMeasure, FluxReport
Main Accessories	Measurement Computer, GPS Receiver, Optical Fiber, Wind Station, Wind Mast, Spare Parts & Tool Kit	Measurement Computer, GPS receiver, Alignment Kit, Lifting Pillar, Damping Cushion, Liquid Nitrogen Dewar, Vehicle Weather Station, Wind Station, Wind Mast, Spare Parts & Tool Kit



” TRULY MOBILE SYSTEMS, LIKE OUR SYSTEM, CAN CAPTURE EMISSIONS FROM A MULTITUDE OF SOURCES IN REAL-TIME



MOBILE LAB

We offer customized, fully equipped (SOF+SkyDOAS+MeFTIR+MeDOAS) mobile lab solutions including vehicle selection & modification, assembly, infrastructure, commissioning, training and support for the selected instrumentation and auxiliary equipment. FluxSense has experience of several vehicle manufacturer (Ford, Volkswagen, Mercedes, Jinbei, Iveco and Hyundai) and has built mobile laboratories in Sweden, California, China and South Korea.

FluxSense Mobile Laboratories can be used for Air Quality Assessments, Emissions Measurement, Emissions Monitoring, Leak Search, Health & Safety, Environmental Regulation & Enforcement, Climate Monitoring, Source mapping etc. Most "Mobile Labs" are just portable and are standing still most of the time which are costly and inefficient. Truly mobile systems, like our system, can capture emissions from a multitude of sources in real-time.



MONITORING STATIONS

Although MeFTIR and MeDOAS were originally designed for mobile applications, they can serve to measure gas concentration continuously with high time resolution and sensitivity.

FluxSense Inc has equipped ten such stations in Los Angeles for 24/7 community air quality monitoring. Each station contains an extractive DOAS and FTIR system including

associated equipment such as valves, pumps, automatic liquid nitrogen filling and a management system for remote control and data analysis and presentation. Similar set-ups can be built to monitor gas concentrations elsewhere, both indoor and outdoor.

” [HTTPS://XAPPPROD.AQMD.GOV/RULE1180COMMUNITYAIRMONITORING/](https://xappprod.aqmd.gov/rule1180communityairmonitoring/)



NEW PRODUCTS & SERVICES

WIND STATION III

The FluxSense Wind station is sold as an accessory our main instruments systems. Accurate local wind measurements are needed for SOF and SkyDOAS flux calculations and crucial for their methodology. Our weather proof and stand-alone Wind Station is logging wind and GPS data. The station can be equipped with a sonic wind meter or an analog prop-and-vane anemometer. An associated 10 or 15 m retractable mast can also be ordered via our provider.



DRONE MEASUREMENTS HAVE A LARGE POTENTIAL DUE TO OFF-ROAD ACCESSABILITY AND VERTICAL SAMPLING CAPABILITY.

UAV OPERATIONS

FluxSense is cooperating with a UAV service provider and can offer drone-based measurements using in-house or external instrument/sensors. Drone measurements have a large potential due to off-road plume access and vertical sampling capability.

A recent VINNOVA study together with Chalmers University of Technology investigated how methane emissions can be quantified from a drone-based platform. Various natural and fossil sources such as landfills, refineries, LNG-terminals, and waste water plants were successfully studied in this project.



UPCOMING INSTRUMENTS

LESS IS MORE FOR THESE TWO NOVEL INSTRUMENTS THAT WILL BE AVAILABLE IN 2024. CONTACT US FOR A QUOTE...

SOF MINI

SOF-mini is a fully automated, lightweight and compact instrument for emission measurements. It can be mounted on the roof of a normal passenger car or carried by a UAV. The instrument has similar performance as regular SOF for alkanes but does not require liquid nitrogen cooling or AC power supply.

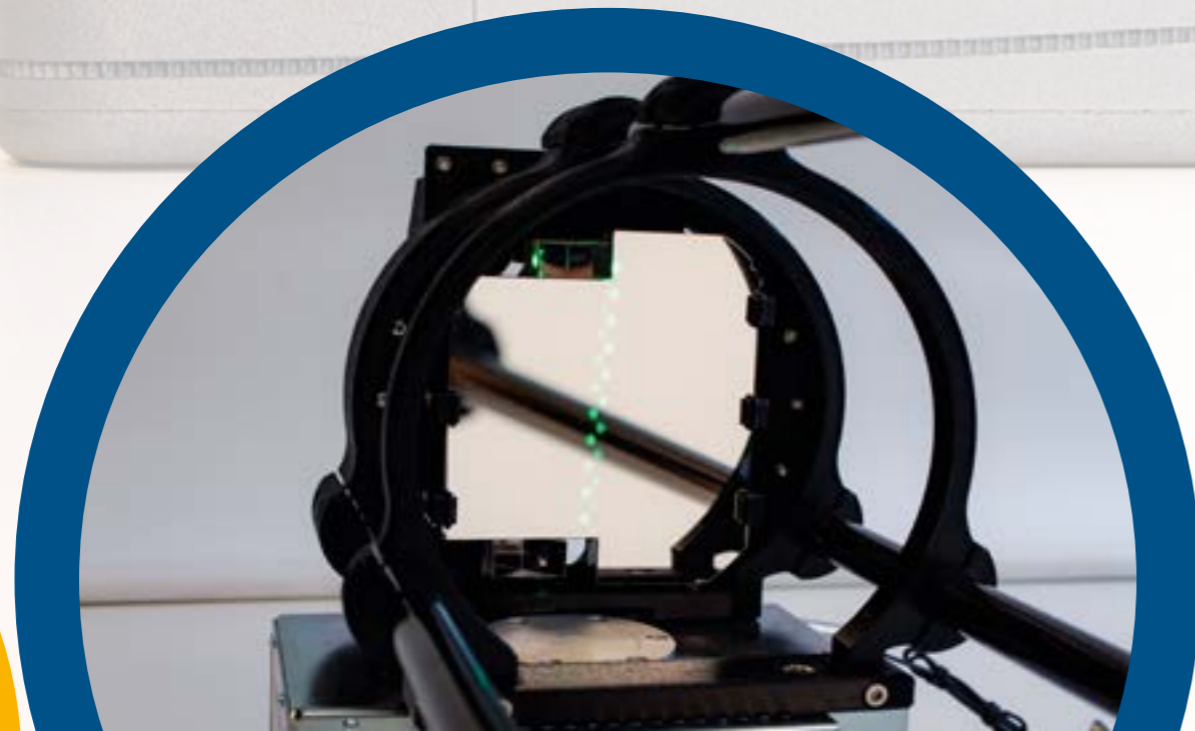


	SOF-mini	MeFTIR-mini
Dimensions W x H x D	18 x 16 x 32 cm	20 x 26 x 100 cm
Weight	3.8 kg	4.6 kg



MEFTIR MINI

MeFTIR-mini is a portable cell instrument for concentration measurements. It can be hand-carried, UAV borne or mounted on a passenger car. The instrument can measure the standard MeFTIR species but does not need liquid nitrogen cooling or AC power.



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