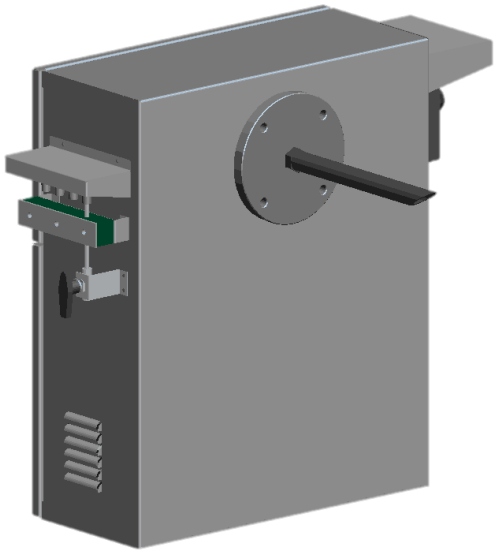
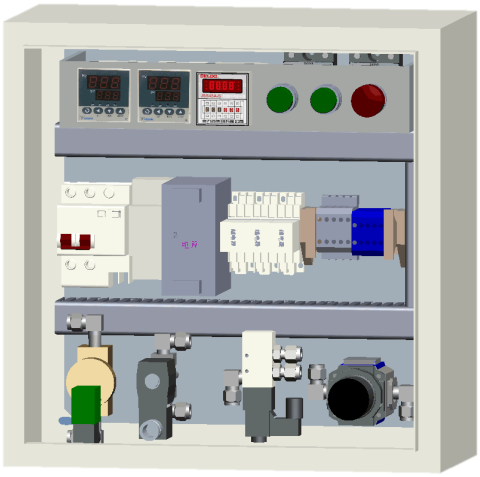
eLAS-200 SM

Stack-Mount Hot Wet Extractive Laser Analysis System for NH_3, HCl or HF



Stack-mount eLAS-200 SM sampling and analysis cabinet



Wall-Mount eLAS-200 SM control cabinet

Application context

European and International legislations impose statutory limits on gaseous emissions to the atmosphere from industrial plants as power stations, waste incinerators, cement kilns, steel production, etc. Mandatory continuous gas measurements are typically SO_2, NOx, CO, CO_2, O_2 and TOC that can be performed by conventional CEM systems. But in some cases it is also required to measure other gases like HCl, NH_3 or HF.

Product description

eLAS-200 SM is the stack-mount and compact version of the already well-known and successful floor standing eLAS-300 hot wet extractive laser analysis system.

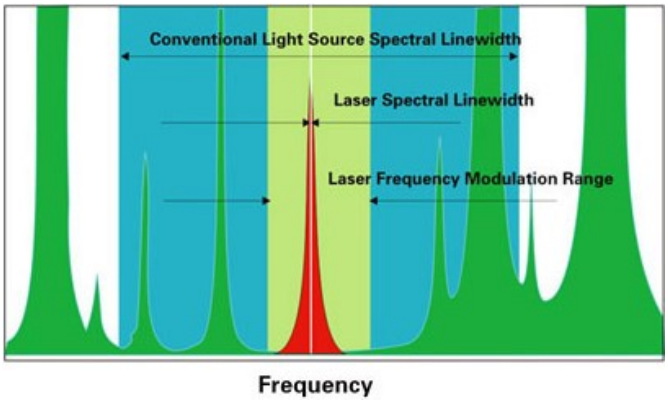
The stack-mount version will be used when the available place for system installation is limited and if the nominal gas concentrations to measure are > 20 ppm. In all other cases, the floor standing eLAS-300 version will be preferred.

eLAS-200SM is composed by 2 different cabinets:

- One stack-mount gas sampling and analysis cabinet designed for installation directly on the stack flange at the measurement point, and
- One wall-mount control cabinet to install nearby the analyser cabinet.

Floor standing eLAS-300 hot wet extractive laser analysis system.

Laser cell technology



The eLAS-200 SM implements the **Tunable Diode Laser Absorption Spectroscopy (TDLAS)** technology for achieving extremely high qualitative gas measurements. Laser Absorption Spectroscopy is a high resolution infrared technique enabling accurate measurements of specific gases while avoiding interferences that are common with traditional infrared detectors. It also offers very short response time (TD_{90}) typically < 2 sec.

No cross-sensitivity typical to NDIR detectors

NDIR detectors select the appropriate wavelength by filtering the light of a thermal emitter through an interference filter having a spectral resolution about 1000x weaker compared to the TDLS laser cell of the eLAS-200 SM having a capability to justify different absorption lines with a gap of 0.1nm

While the NDIR detector will be subject to cross-sensitivities when absorption bands of different gases overlap that will result in measurement errors, the TDLS cell will not suffer from cross-sensitivities, especially when selecting a correct absorption line of the target gas that is about 10 times sharper than the absorption lines width of possible background gases.

No interference from dust or moisture
Better Long-Term Stability with Single-Channel cells

Technical specifications of eLAS-200 SM

Flue gas conditions	
Flue gas temperature	300°C (600°C in option, higher temperature on request)
Maximum operating pressure	Patm ±100 mbar (Please consult us for other gas pressure)
Maximum dust concentration	Standard: 20 g/Nm³ - Optional up to 100 g/Nm³
Ambient operating conditions	
Temperature	–20°C to +50 °C
Pressure	800 to 1200 mbar
Relative Humidity	0-95% non condensing
Stack-mount cabinet	
Mechanical specifications	
Dimensions - Weight	W450 x H550 x D200 mm; 25kg
Construction	Stainless steel 316 cabinet divided into 2 compartments, each with one access front door with fast locking system
Protection degree	IP 65, for outdoor installation in industrial environment
Recommended installation	Horizontally with floor plane, with an installation angle ≥ 10°
Mounting flange	2" – ANSI 150 SS316 (ND65)
Upper compartment	**Gas sampling**
Temperature control	Heated at 190°C
Components	gas sampling probe with heated filter, back-flush valve, calibration valve, jet pump, SS316 piping, heating elements
Gas sampling probe	
Wet parts & sampling pipe material	Stainless steel SS 316L
Sampling pipe dimensions	Ø25 mm x Lg 1200mm (other lengths on request)
Filter chamber heating	190-200°C
Filter element material	Sintered stainless steel
Filter dimensions	External Ø35 x lg. 152 mm
Filter rating	2µm (other ratings from 1to 10 µm available on request)
Filter maintenance	The filter is easily accessible via the front door. It can be pulled out from the device as a whole without tooling
Filter Blow-back	PLC controlled, factory setting: 2hrs (adjustable) Instrumental compressed air; pressure range: 4-6 bar
Gas sampling pump	Jet pump type operated by compressed air, no moving parts
Blow-back valve	Blocks the gas sampling during the filter & pipe blow-back
Calibration valve	Blocks the gas sampling in calibration mode
Bottom compartment	**Gas analyzer**
Laser cell	Compact laser cell as used in the eLAS-200 19''-4U analyser
Available gases	HCl or HF or NH_3 (optional measurement of H_2O on request)
Measurement principle	Tunable Diode Laser Absorption Spectroscopy (TDLAS)
Laser cell	200 mm
Optical path length	400 mm
Laser cell operating temperature	190°C
Warm up time (from Tamb 25°C)	45 minutes
Standard measurement ranges	0-50 ppm to 0-500 ppm
Lowest detection limit	0.2 ppm (NH_3) /0.1 ppm (HCl and HF)
Accuracy	±2% FS
Response time (TD + T_{90})	≤ 2 sec @ nominal gas flow rate of 3L/min
Nominal gas flow through laser cell	3L/min (min. 1.5L/min - max. 5L/min)
Gas temperature at laser cell inlet	190°C
Gas pressure at laser cell inlet	Max. +100 mbar relative
Temperature control	Fan set to avoid over heating of the compartment
Wall-mount cabinet	
Mechanical specifications	
Dimensions - Weight	W400 x H500 x D210 mm; 20kg
Construction	Stainless steel 316 cabinet
Protection degree	IP 65, for outdoor installation in industrial environment
Recommended installation	Nearby the stack-mount cabinet
Components	Compressed air pressure & flow controls, temperature controllers, electrical components, Siemens PLC S7-200 Smart
Communication	
Analogue output	1x 4-20 mA , maximum load 900Ω
Digital communication	1x RS232/485 serial communication port
Relay outputs	3x alarm relay, load capacity 220VAC/24VDC/1A, for concentration overrun, transmittance and laser temperature
Electrical specifications	
Power supply	110-220 VAC/ 50-60Hz / <1 KVA

eLAS-200 SM Overview

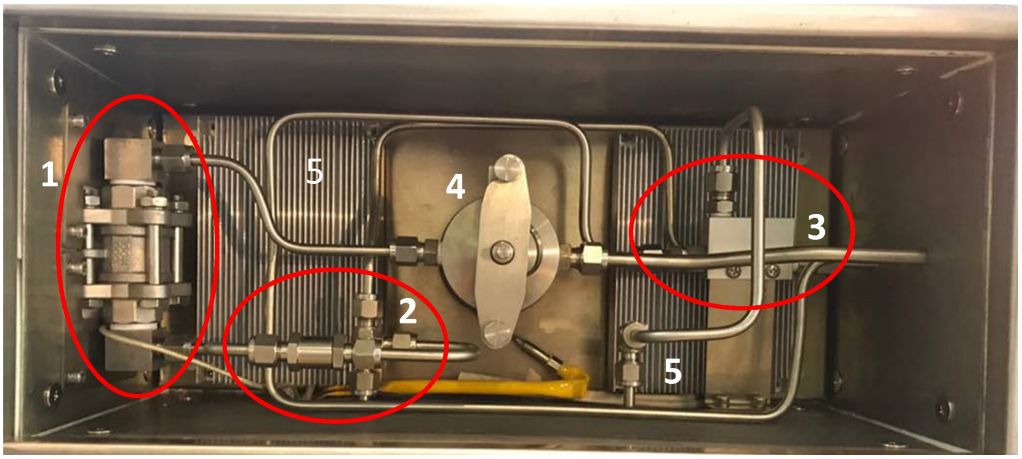
Stack-mount eLAS-200 SM
Analysis Cabinet

Inside view eLAS-200 SM
Analysis Cabinet

Right side view eLAS-200 SM
Analysis Cabinet

Details of gas/compressed air connections

eLAS-200 SM Overview



1. SS 316 Blow-back valve
2. SS 316 calibration valve
3. Gas sampling pump (jet pump)
4. Heated filter
5. Heating elements

Gas sampling compartment
eLAS-200 SM Laser Analysis System

1. Compact laser cell
2. Display analyzer
3. Keyboard
4. Laser cell temperature controller
5. Compartment ventilation (fan set)
6. Analyzer electronics
7. Electrical connections (analyzer to PLC in the control cabinet)
8. Air intake grid

Gas analysis compartment
eLAS-200 Laser gas analyzer with compact laser cell

2" – ANSI 150 SS316 (ND65)
Stack mounting flange
with sampling pipe thread connection

Non contractual pictures and specifications - Subject to change without prior notification - Document version EN17v1

Pollutek Gas Analysis

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