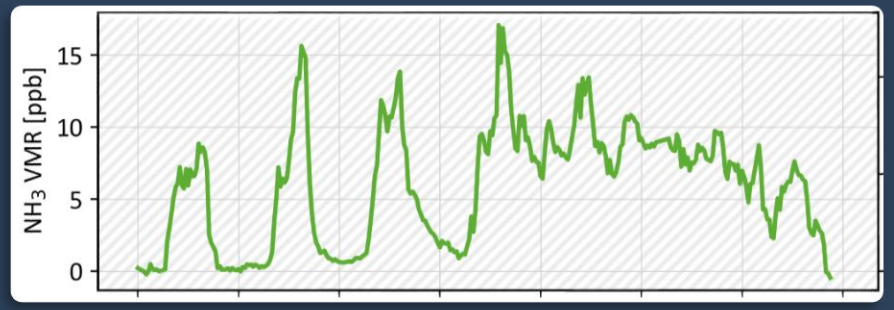
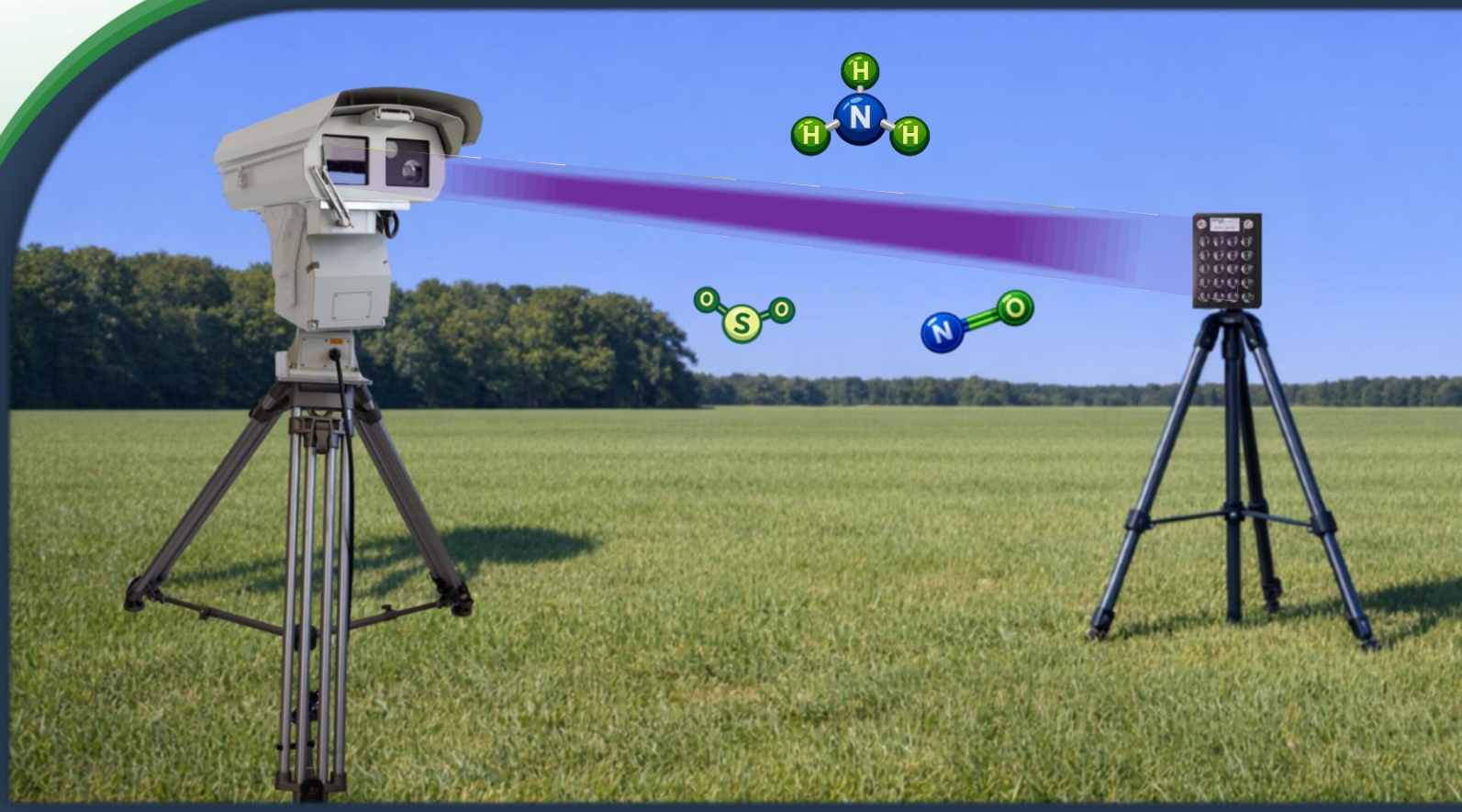
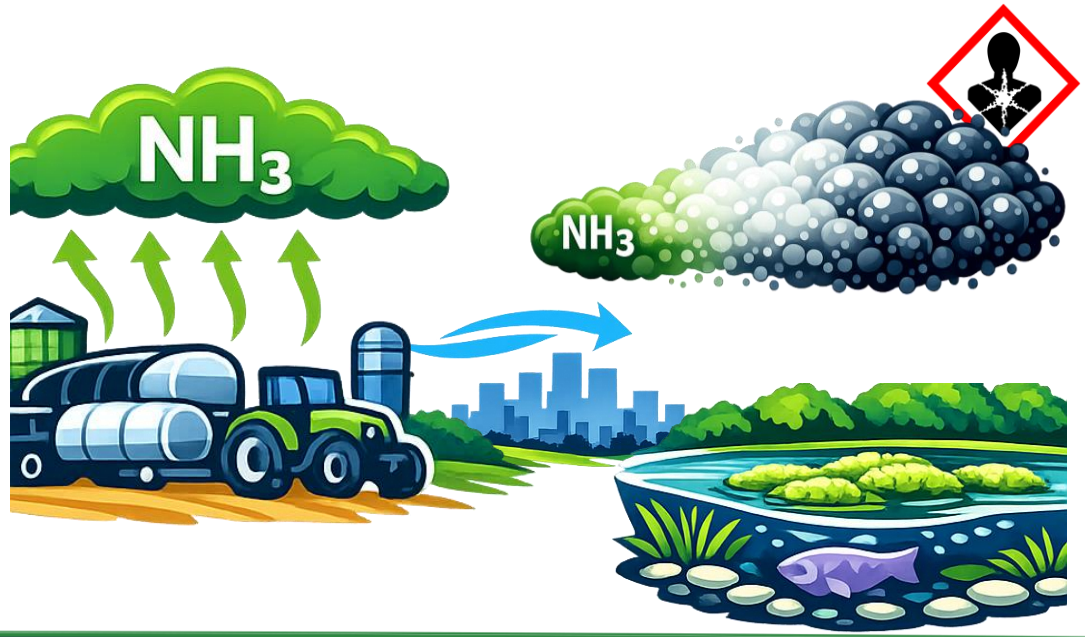
Airyx Open Path Compact NH_3

Contact-free ammonia detection for uncompromised accuracy.





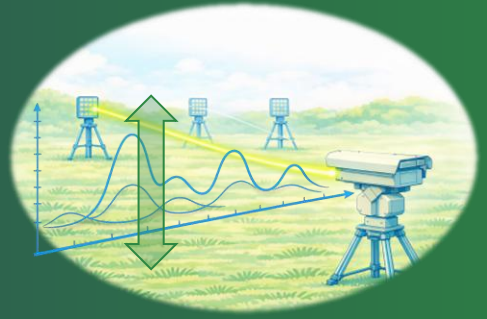
Rising demand for Ammonia Measurements



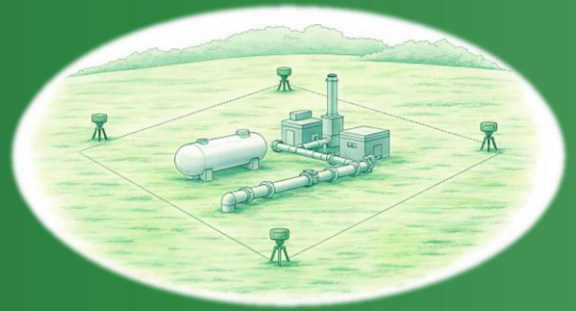
EU: Mandatory NH_3 monitoring

Agriculture & industrial emission

Flux & spatial distribution analysis

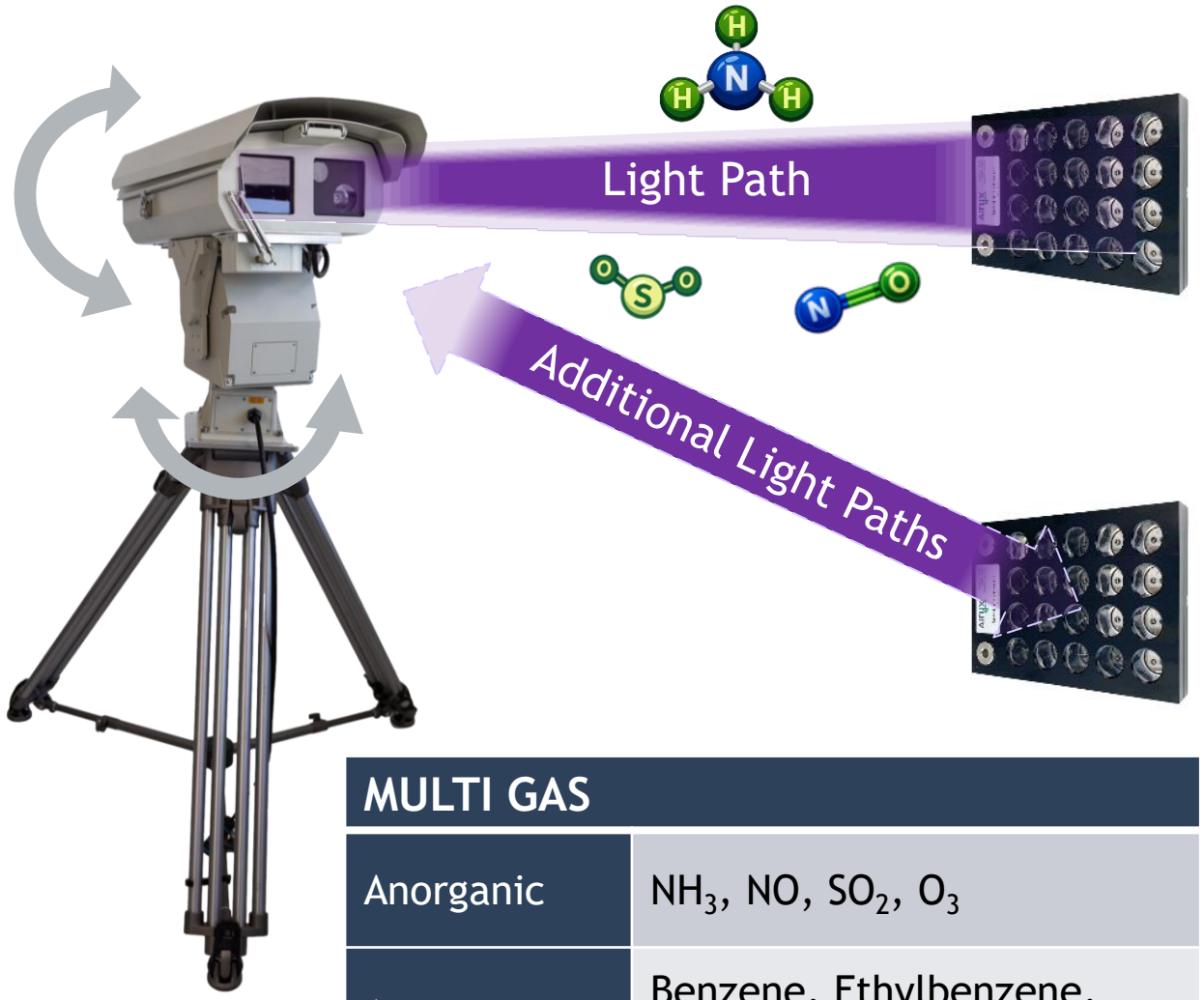


Process control & fence line monitoring



Open Path Compact NH_3

Contact-free ammonia detection for uncompromised accuracy.



	NH_3	NO	SO_2
Range	1 ppb - 100 ppm	3 ppb - 5 ppm	5 ppb - 20 ppm
Uncertainty (5 min)	0.6 ppb 0.4 µg m^{-3}	1.5 ppb	2.5 ppb
Uncertainty (1h mean)	0.10 ppb 0.08 µg m^{-3}		

MULTI GAS	
Anorganic	NH_3, NO, SO_2, O_3
Aromatic	Benzene, Ethylbenzene, Xylene, Toluene

COMPACT & FLEXIBLE
One instrument – multiple light paths
Optional tripod

RUGGED & OUTDOOR-READY
Weather-Proof (IP64)

SMART DATA ACCESS
WIFI & LAN, M2M Communication (UIDEP)
Internal data storage

Airyx

Effortless Setup & Maintenance

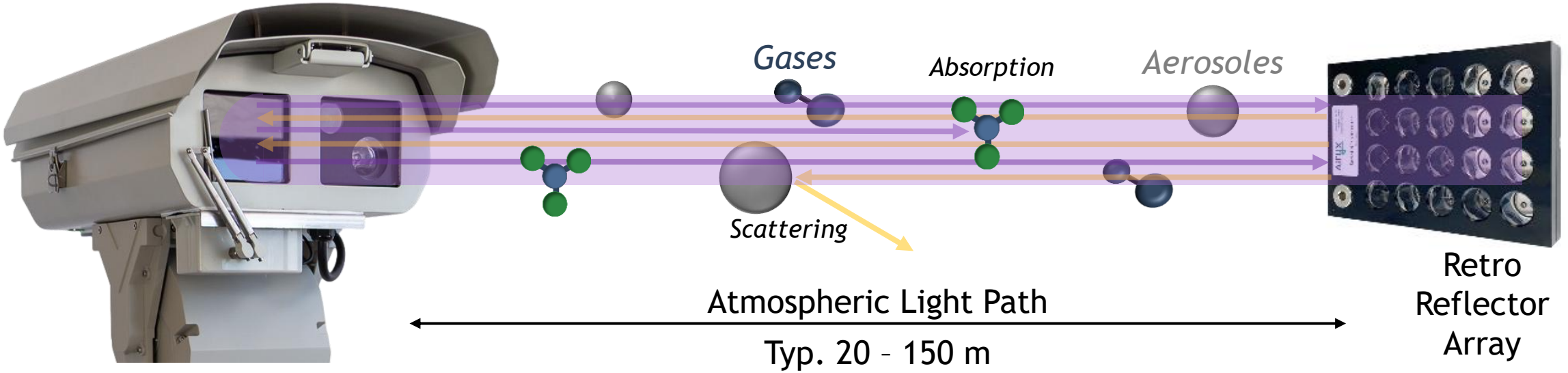
Easy & flexible setup

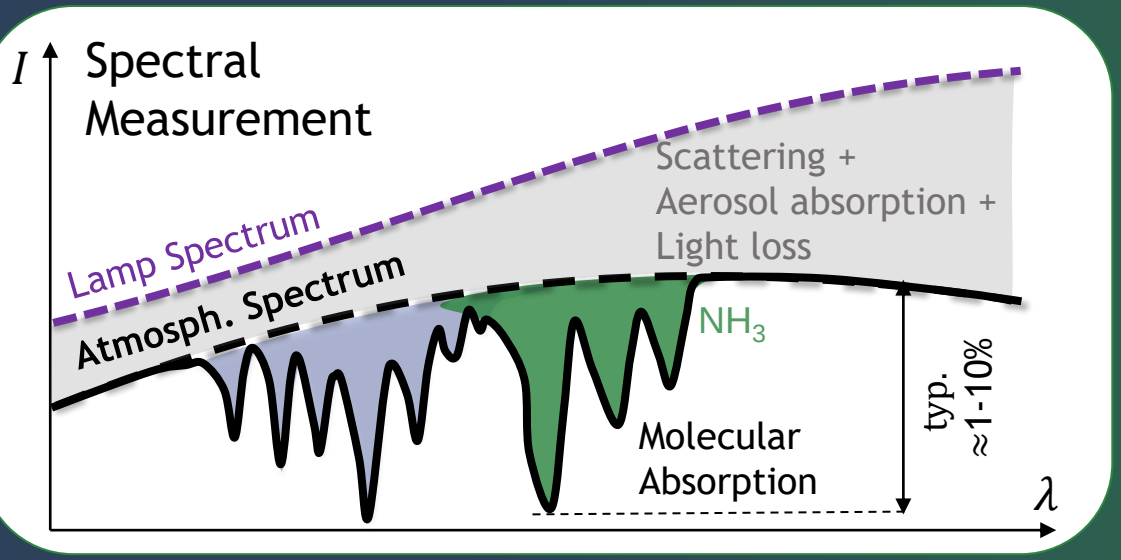
- Stationary or mobile on tripod
- Camera-supported identification of viewing directions
- Automatic alignment & adjustment of light path

Low Running Costs

- Lamp change 2-3 x / year
- Dessicant change 2 x / year
- Cleaning of window, reflector & heat sink filter
- **No other consumables**

Open Path DOAS (OP-DOAS) Measurement Principle





DOAS-Fit

Spectral
Database

Path-averaged concentrations

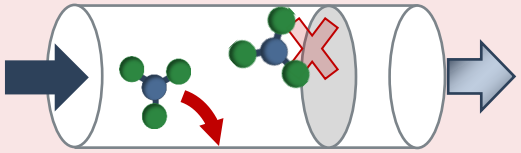
No calibration
gases required

Open Path DOAS Advantages

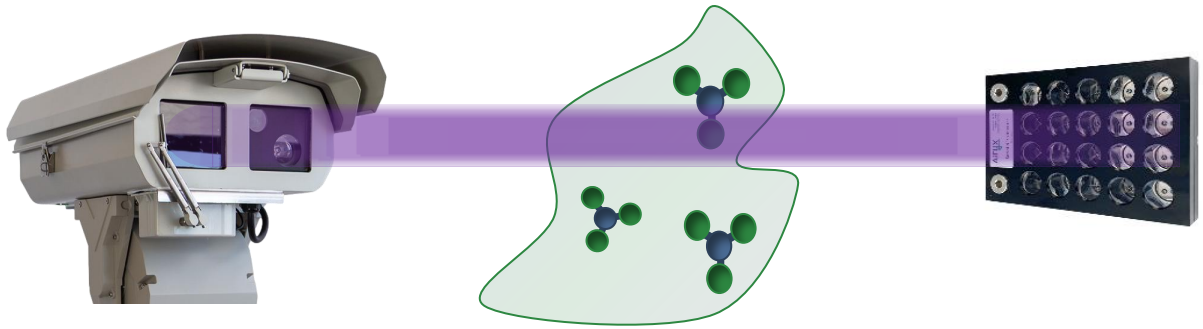
CONTACT & LOSS FREE

No surfaces – no losses

Sampling methods:



Losses & adsorption



SPATIALLY REPRESENTATIVE

across entire light path

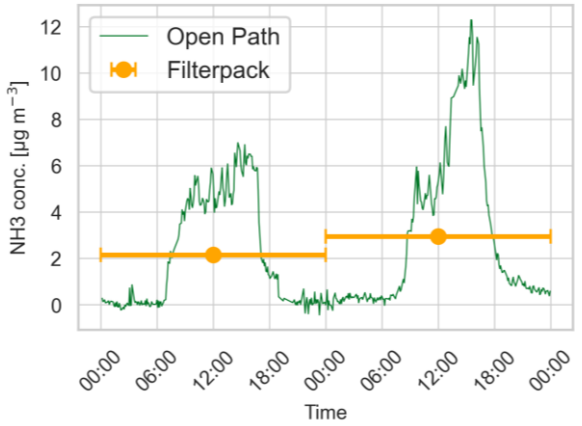
HIGH PRECISION

Automatic zero reference

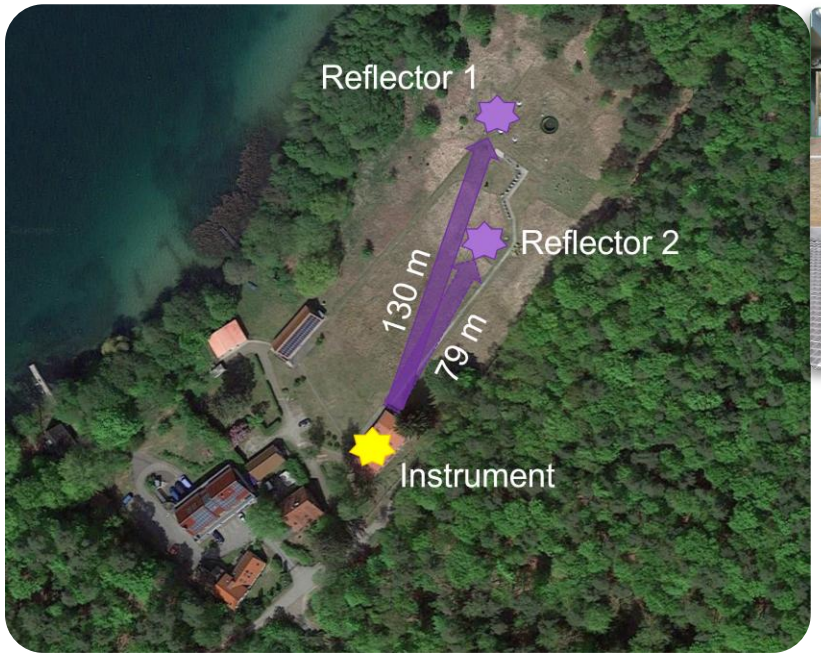
CALIBRATION FREE

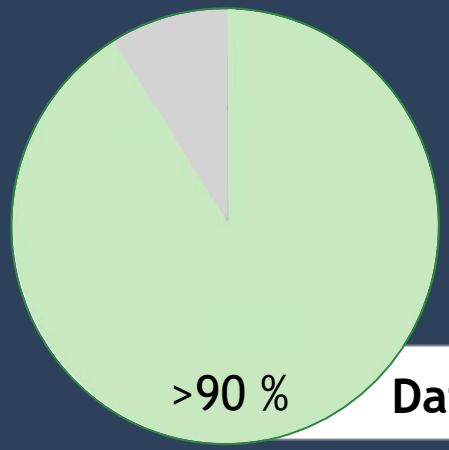
Low running costs

HIGH TEMPORAL RESOLUTION

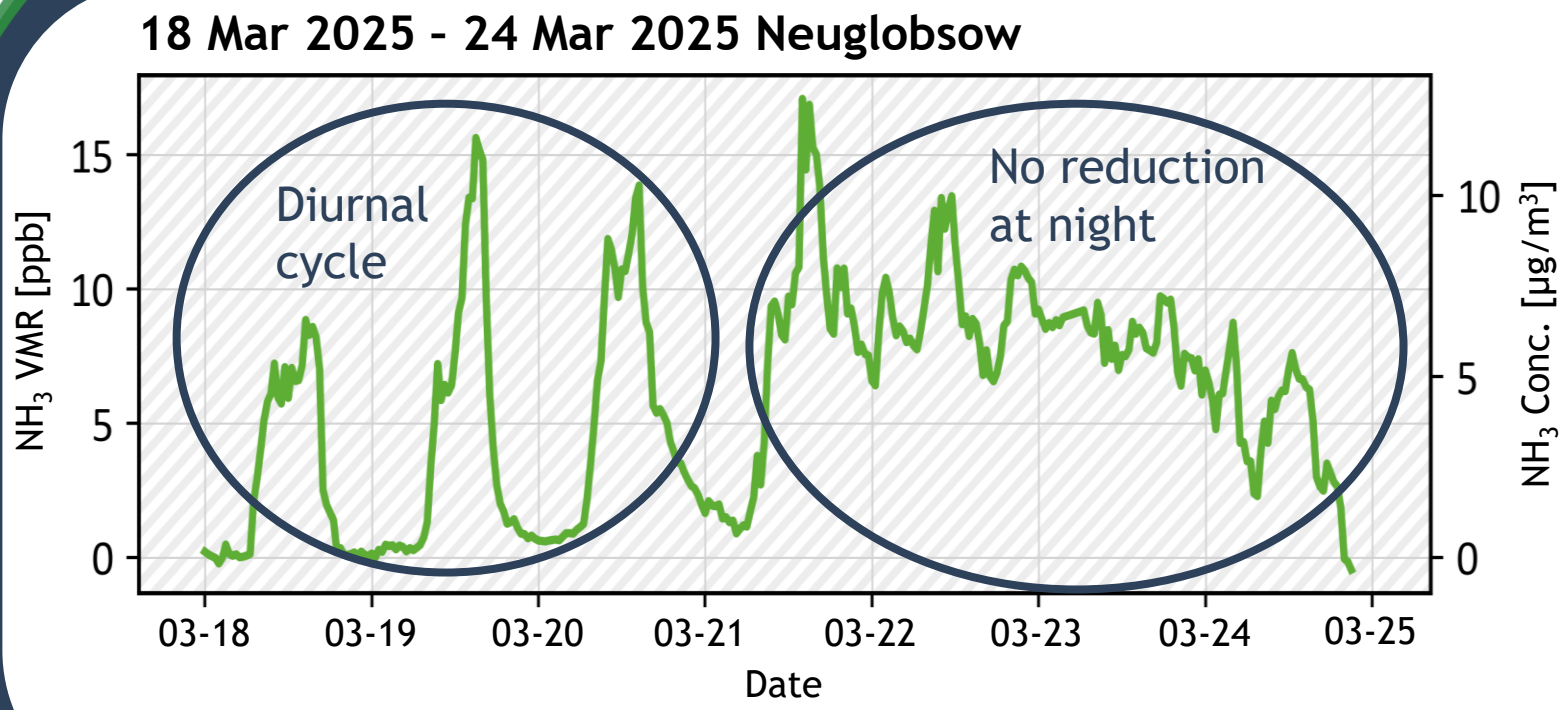


One year of measurements at Neuglobsow, Germany



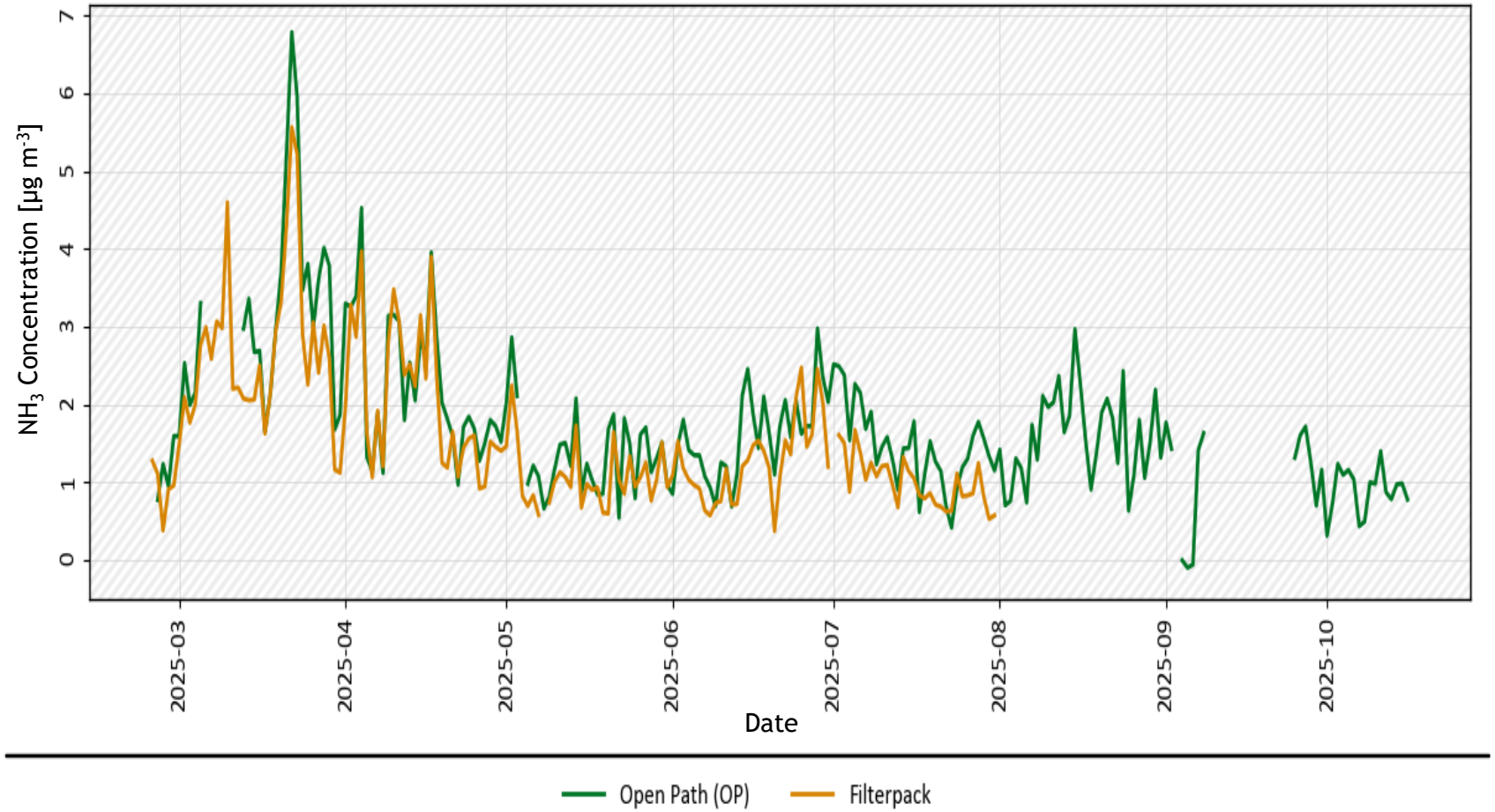


Data Coverage

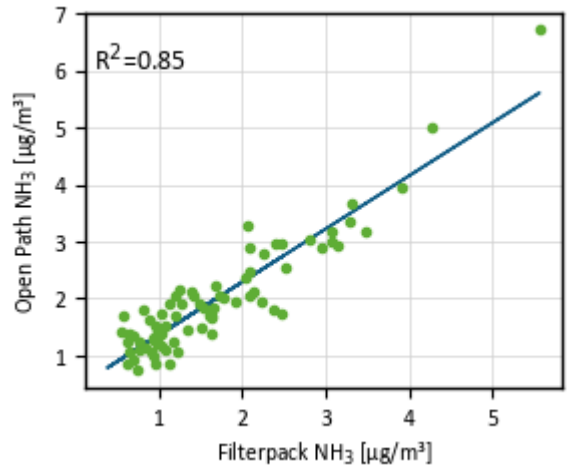


Validation against established NH_3 Measurement Methods

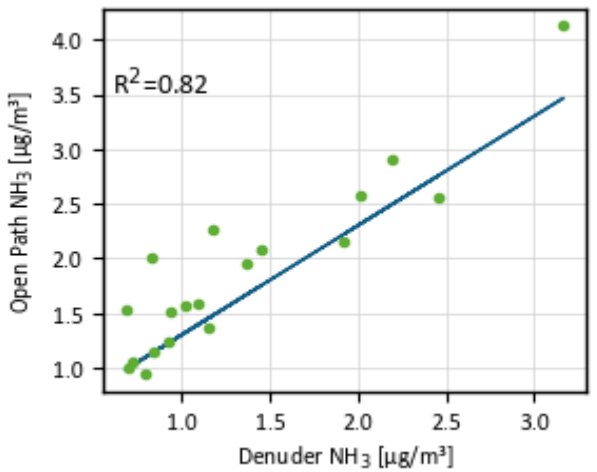
Filterpack and Open Path Daily Averages



Correlation to Filterpack



Correlation to Denuder



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Datasheet

Contact us

Website

Comparison to other instruments

		Offline	Online
	General remarks	Analysis in dedicated laboratory → Limited time resolution (1d – 1 month) → High running costs for analysis	(Near) Real-time data
Extractive sampling	NH_3 adsorption & reactions in sampling line → limited accuracy → reduced time resolution	Denuder • Typical time resolution: 1 week – 1 month	Cavity Ring Down Spectroscopy (e.g. Picarro) • High cost
		Filterpack • Typical time resolution: 1 day	Online Ion Chromatography (e.g. Teledyne API) • Regular calibration required • Indirect NH_3 measurement → cross intereference with other species
		Passive sampler • Typical time resolution: ≥ 1 week	Photoacoustic Spectroscopy • Possible Interference with VOCs
In situ	Contact-free measurement		Open Path QCLAS (e.g. Healthy Photon) • High cost • Data loss during rain
			Open Path DOAS

Comparison Mini-DOAS (TNO)

	Mini-DOAS	NH_3 Open Path Compact	Advantages Airyx
Calibration	In Laboratory using ~ 20 m cuvettes + calibration gases	Calibration free: Deploy spectral data base + apply to instrument	Minimal personnel expenses & costs. No uncertainties of calibration gases.
Lamp reference	In Laboratory	Continuously during measurement	Adapt to lamp aging.
Light path	≤ 50 m	≤ 200 m	Stronger NH_3 signal.
Light path setup & adjustment	Manual alignment	Automatic alignment & readjustment	Easy setup, robust
Maintenance	?	Exchange lamp on site (2x/year)	Little measurement time loss. Low costs.

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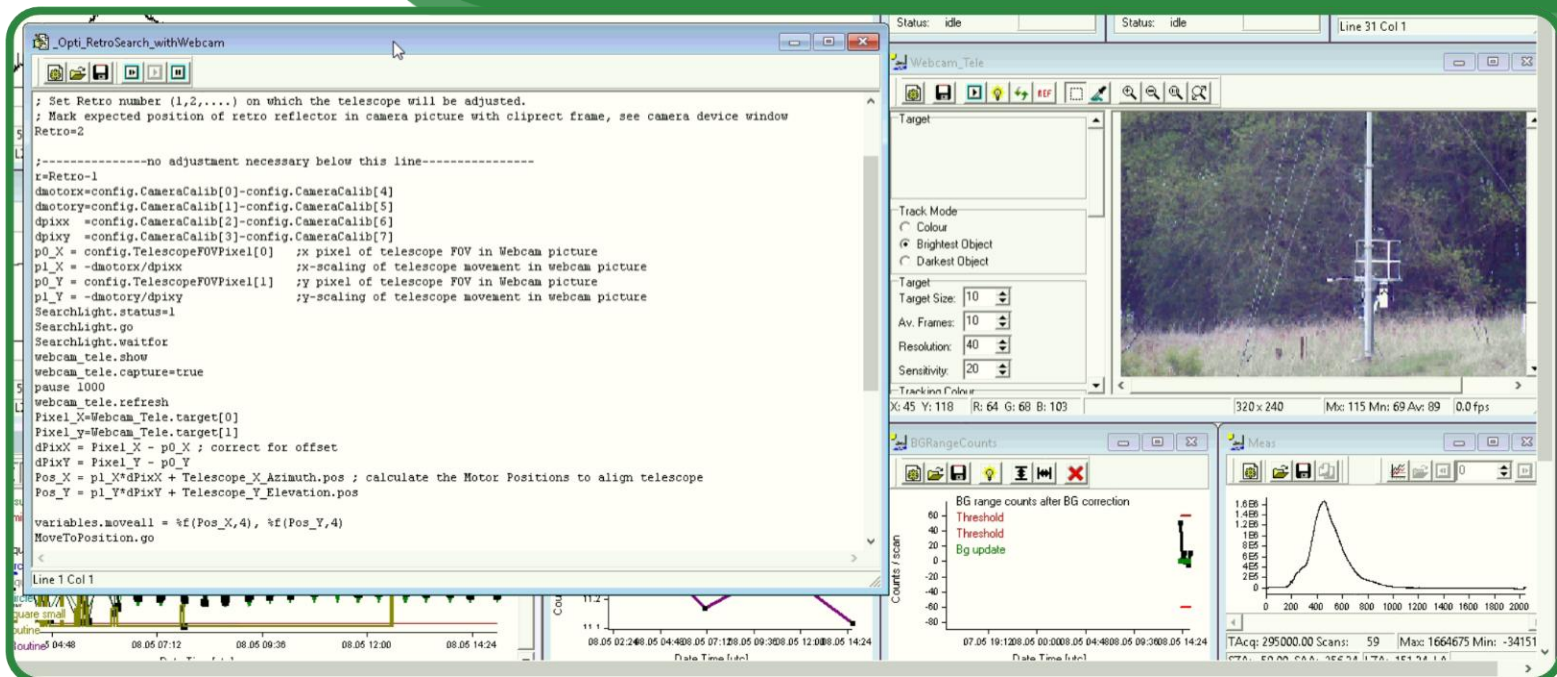
Instrument Setup

Hardware setup

- Mounting (instrument & reflectors) on tripod / with rail mount
- Power supply: 24 V adapter, connected to standard 230 V supply
- LAN cable connection if required

- Software configuration:
  - Definition of reflector sequence & path lengths
  - Identification of reflectors using integrated camera



Maintenance

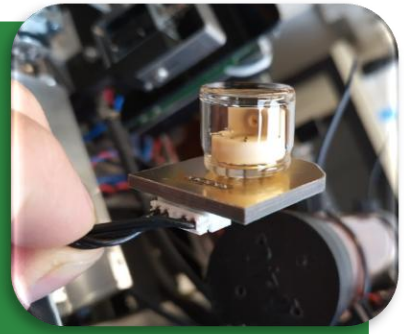
Cleaning of filter & heat sink

Site-dependent

< 15 min

Rinsing with water

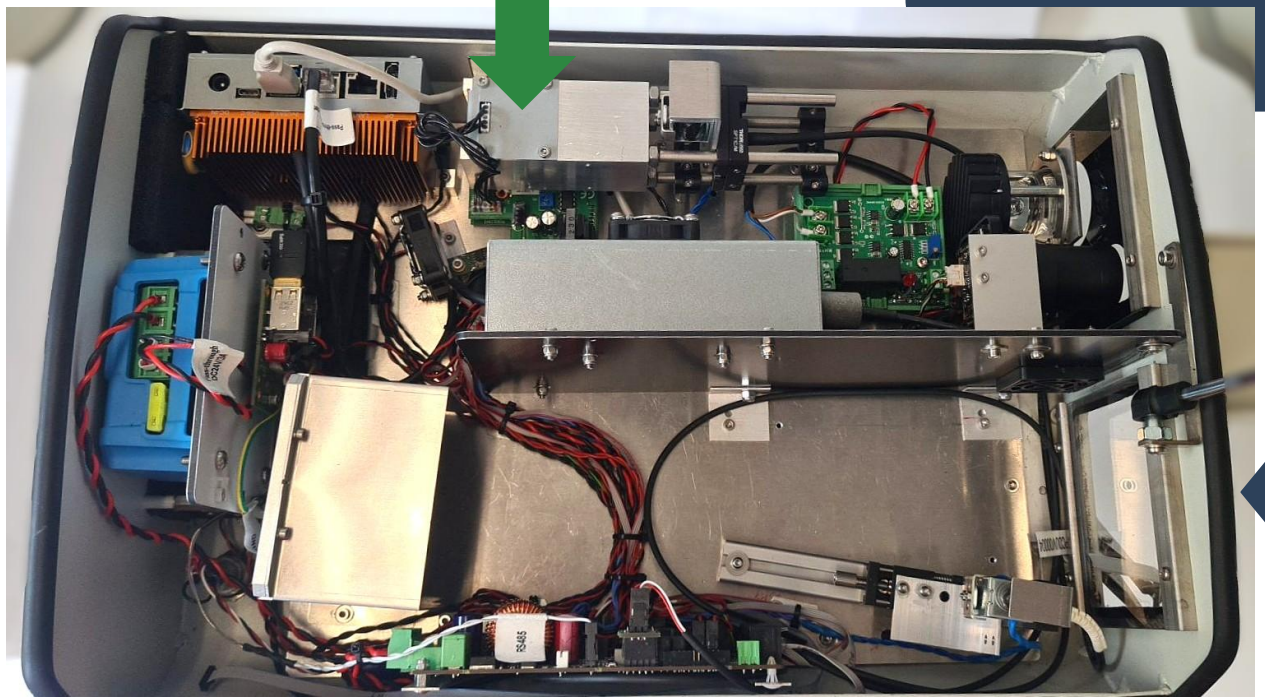
Lamp change



2-3 x / year

< 20 min

1200€ / Lamp (without VAT)



Dessicant change

2 x / year

< 15 min

Dessicant reusable after heating to 130° C

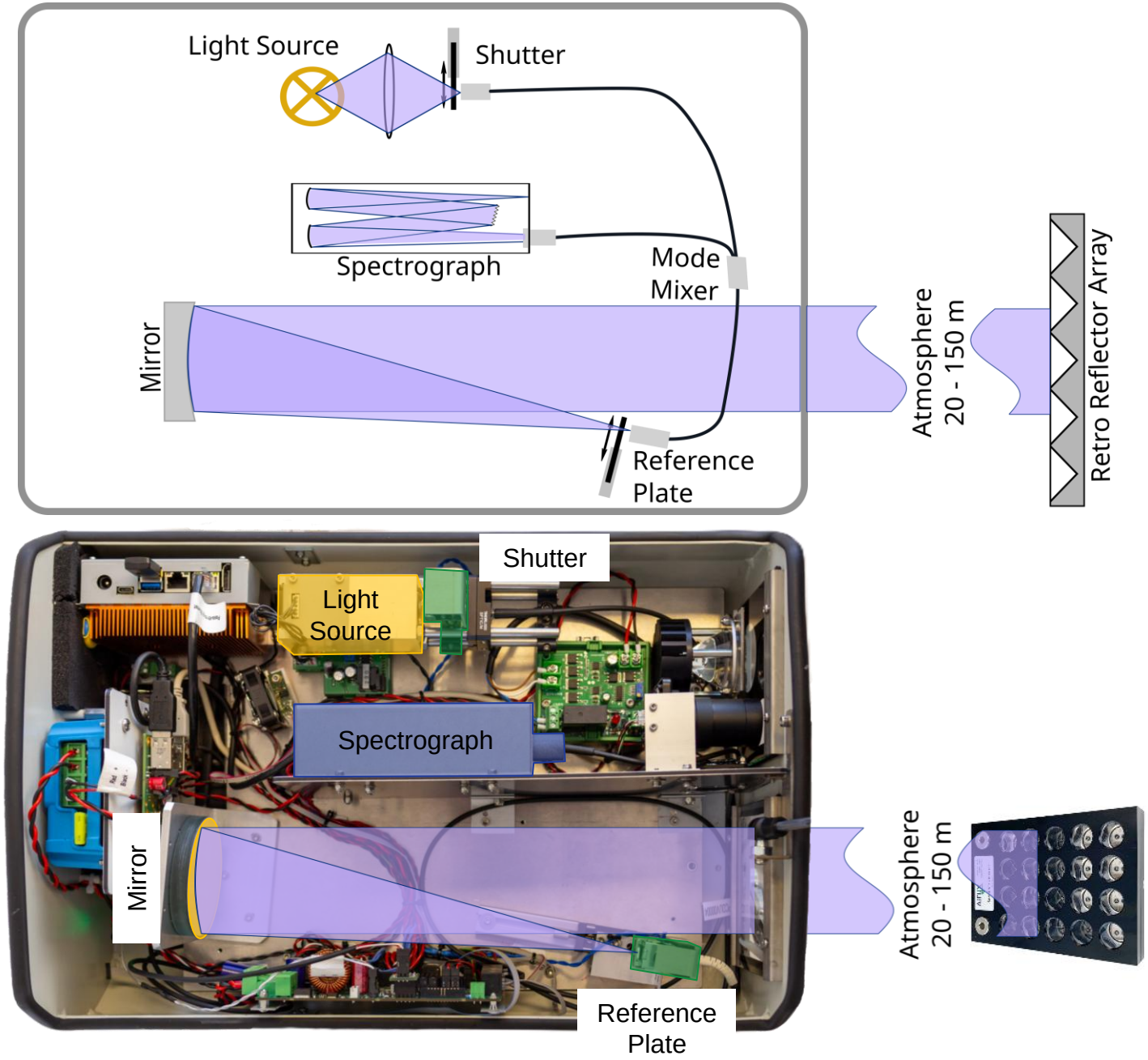
Cleaning of window (outside) & reflector

Site-dependent

Standard glass cleaner

Airyx

Internal Setup



Adaption of high-resolution cross sections to instrument resolution (Convolution)