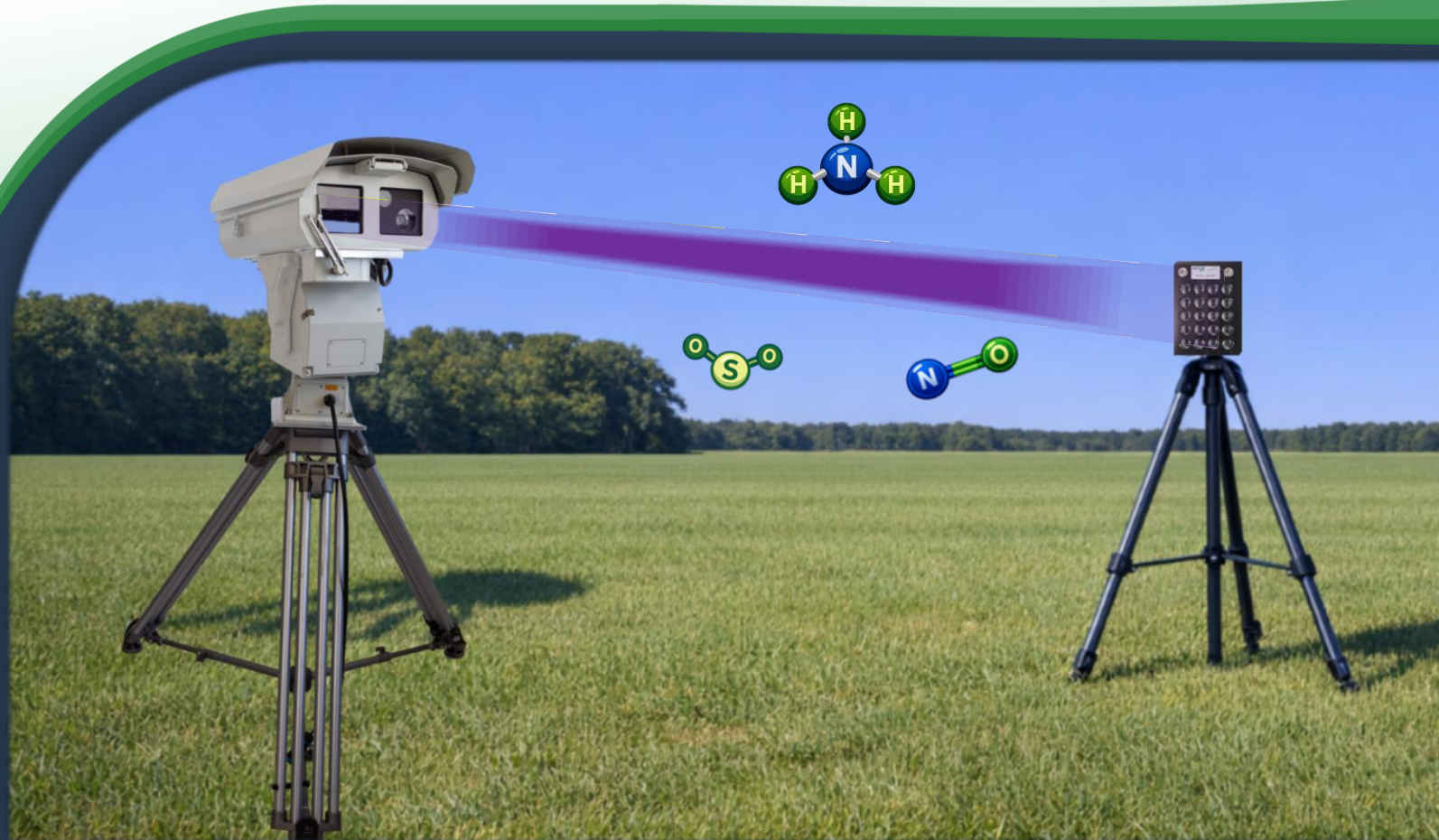
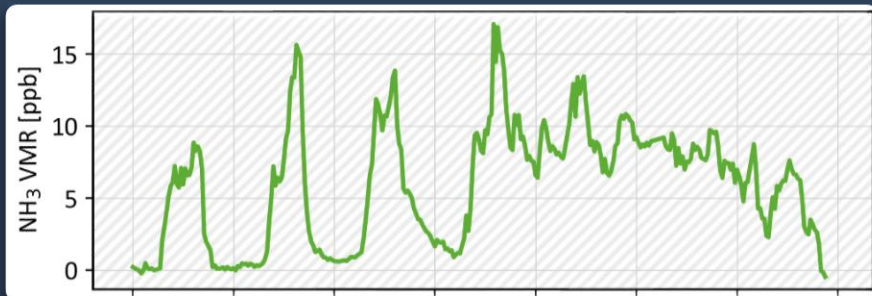


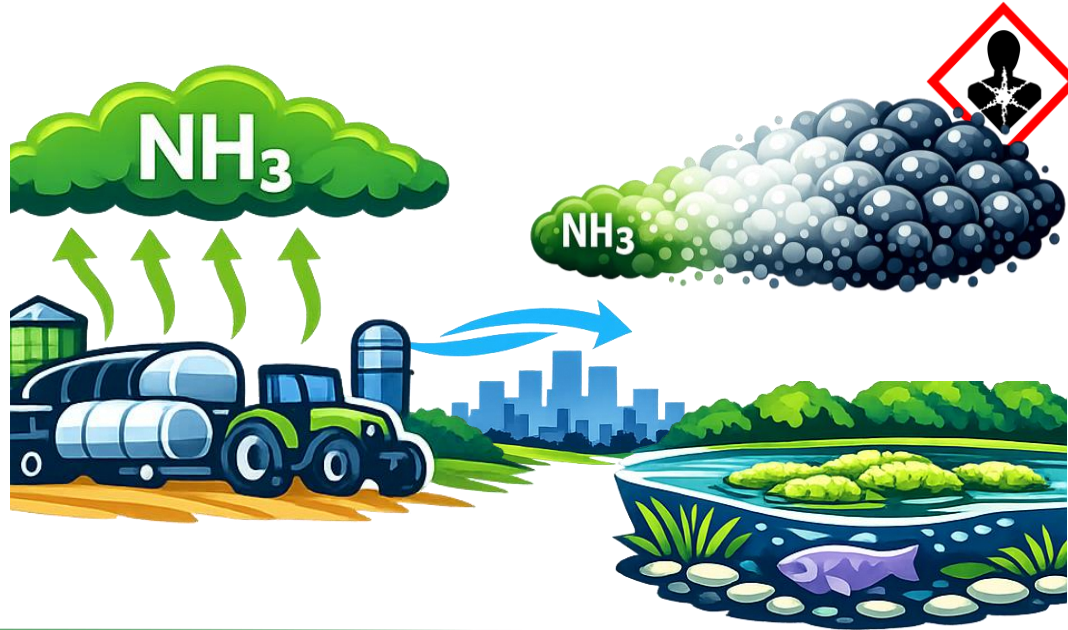


Airyx Open Path Compact NH₃

Contact-free ammonia detection for uncompromised accuracy.



Rising demand for Ammonia Measurements



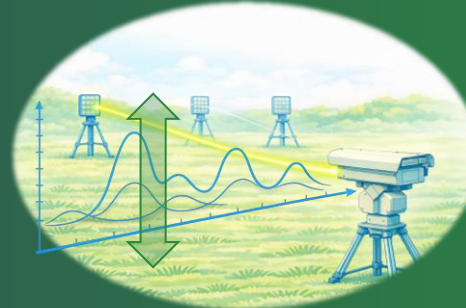
EU: Mandatory NH_3 monitoring



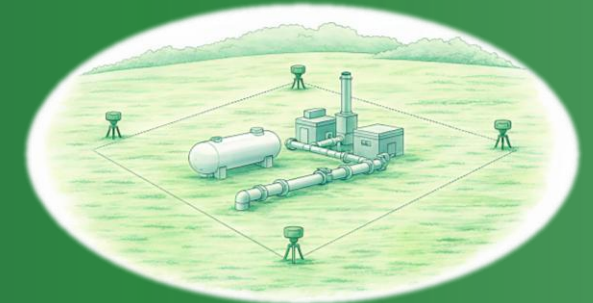
Agriculture & industrial emission



Flux & spatial distribution analysis

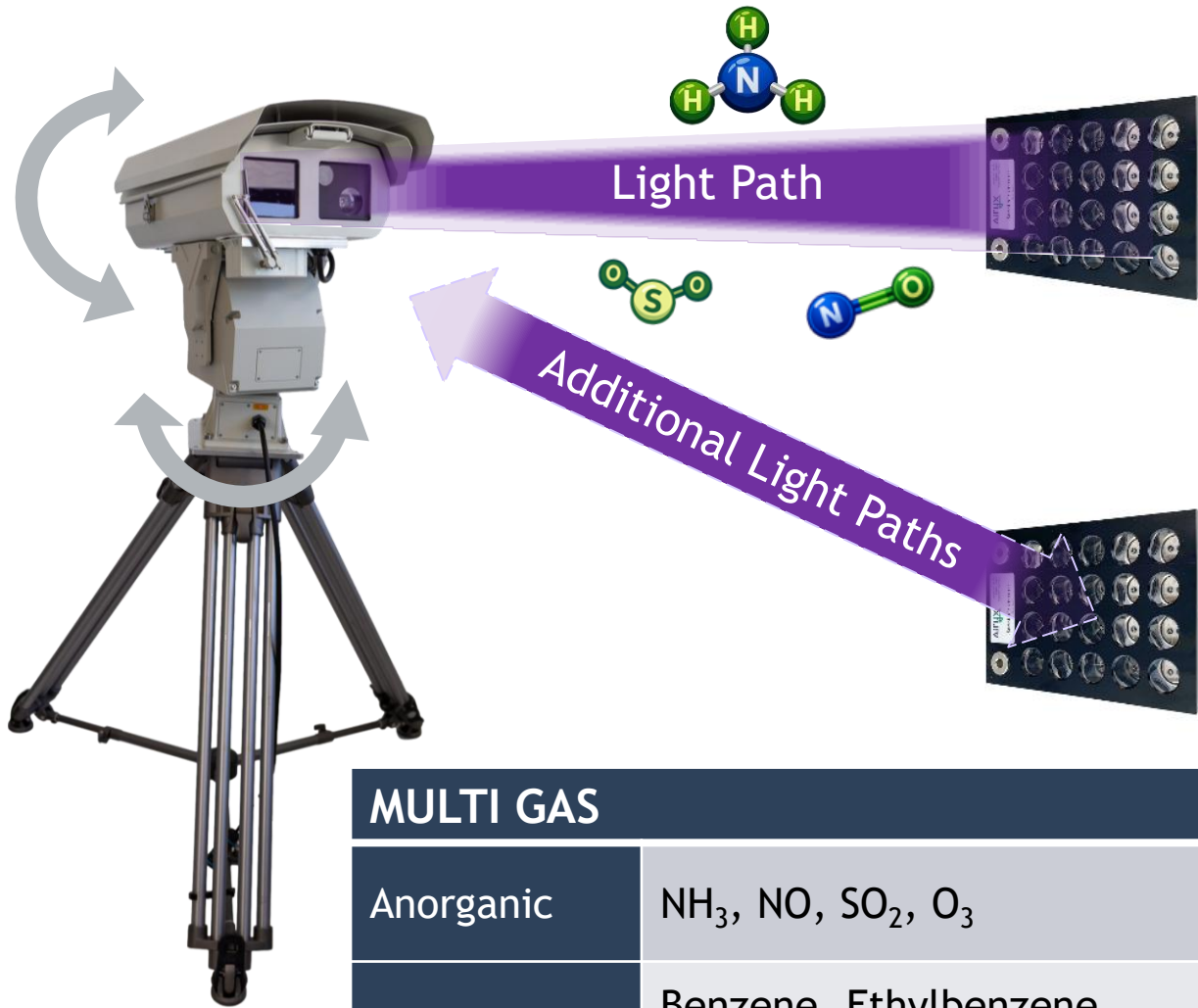


Process control & fence line monitoring



Open Path Compact NH₃

Contact-free ammonia detection for uncompromised accuracy.



MULTI GAS	
Anorganic	NH ₃ , NO, SO ₂ , O ₃
Aromatic	Benzene, Ethylbenzene, Xylene, Toluene

	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		



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

Effortless Setup & Maintenance



Easy & flexible setup



Stationary or mobile on tripod



Camera-supported identification of viewing directions



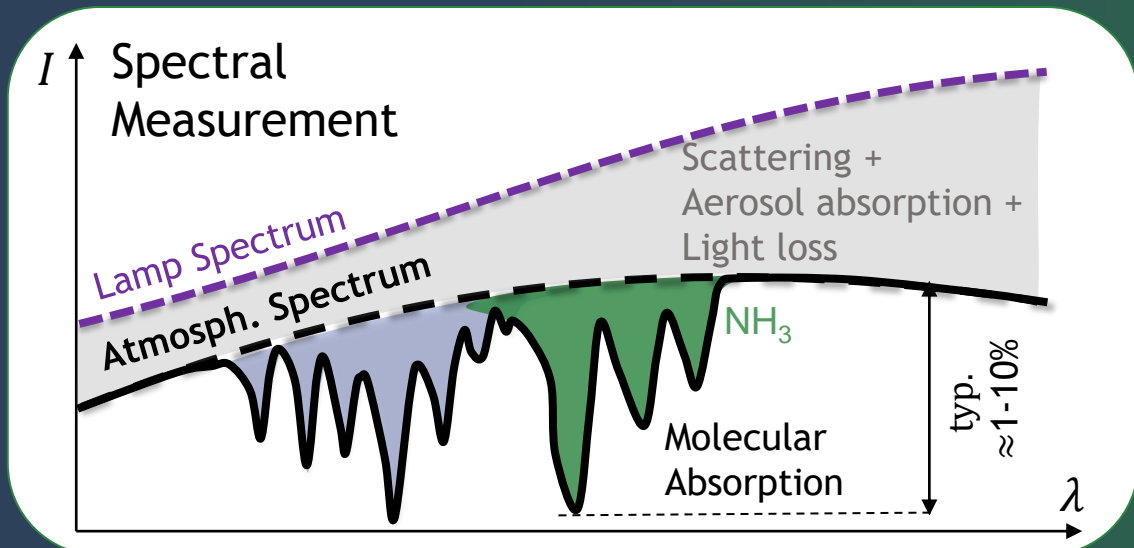
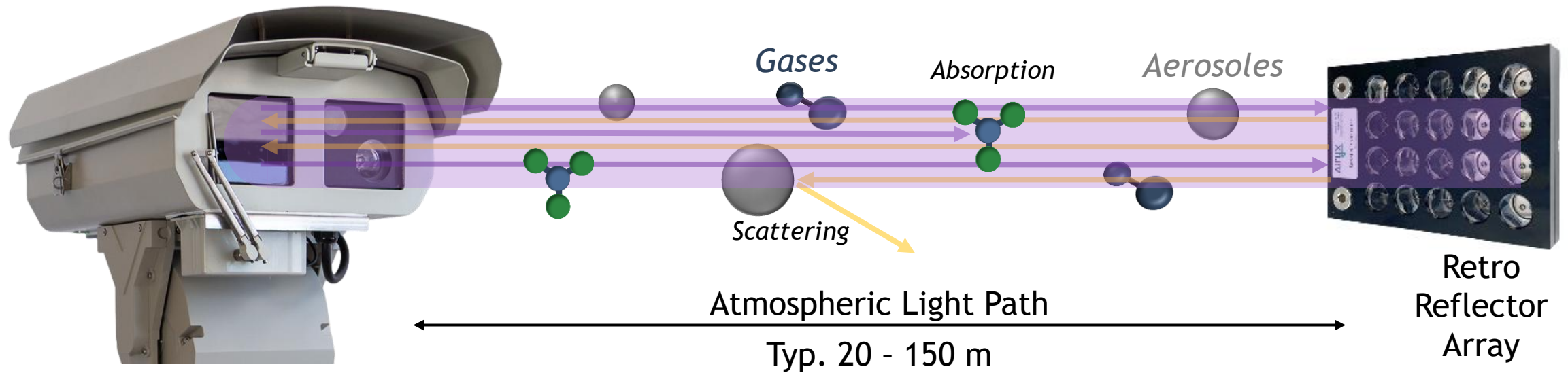
Automatic alignment & adjustment of light path

Low Running Costs

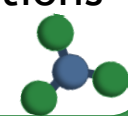
- Lamp change 2-3 x / year
- Dessicant change 2 x / year
- Cleaning of window, reflector & heat sink filter
- **No other consumables**



Open Path DOAS (OP-DOAS) Measurement Principle



Path-averaged concentrations



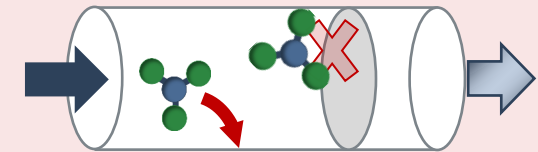
No calibration gases required

Open Path DOAS Advantages

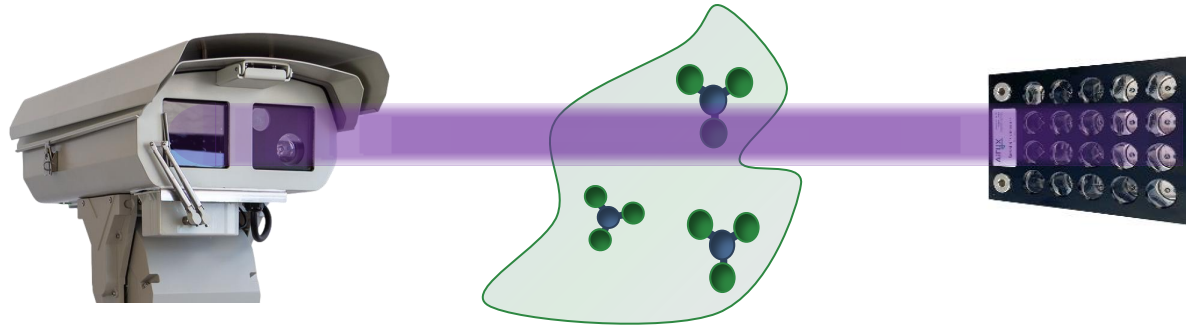
CONTACT & LOSS FREE

No surfaces - no losses

Sampling methods:



Losses & adsorption



SPATIALLY
REPRESENTATIVE
across entire light
path

HIGH PRECISION



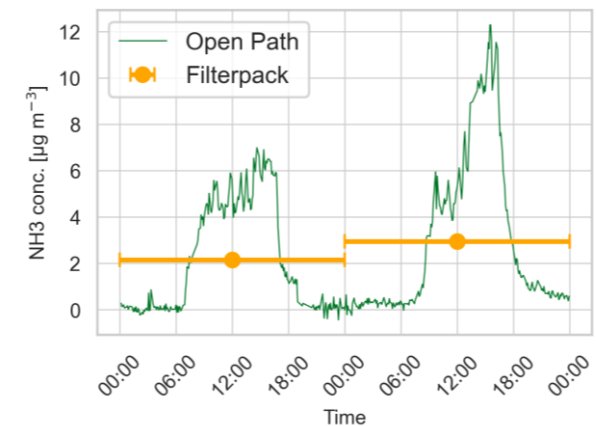
Automatic zero
reference

CALIBRATION FREE

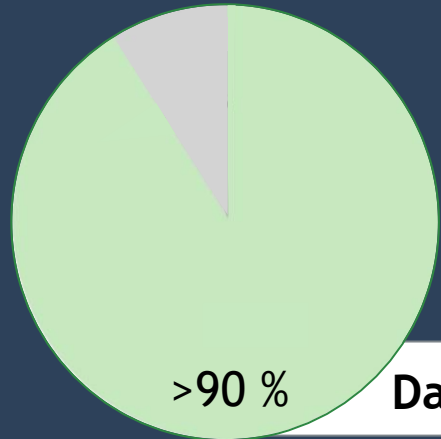
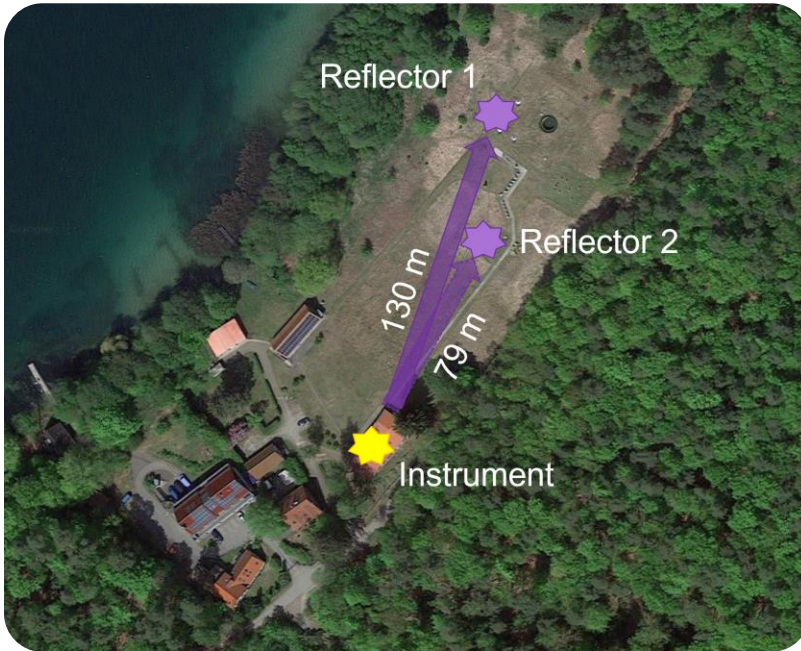


Low running costs

HIGH TEMPORAL RESOLUTION

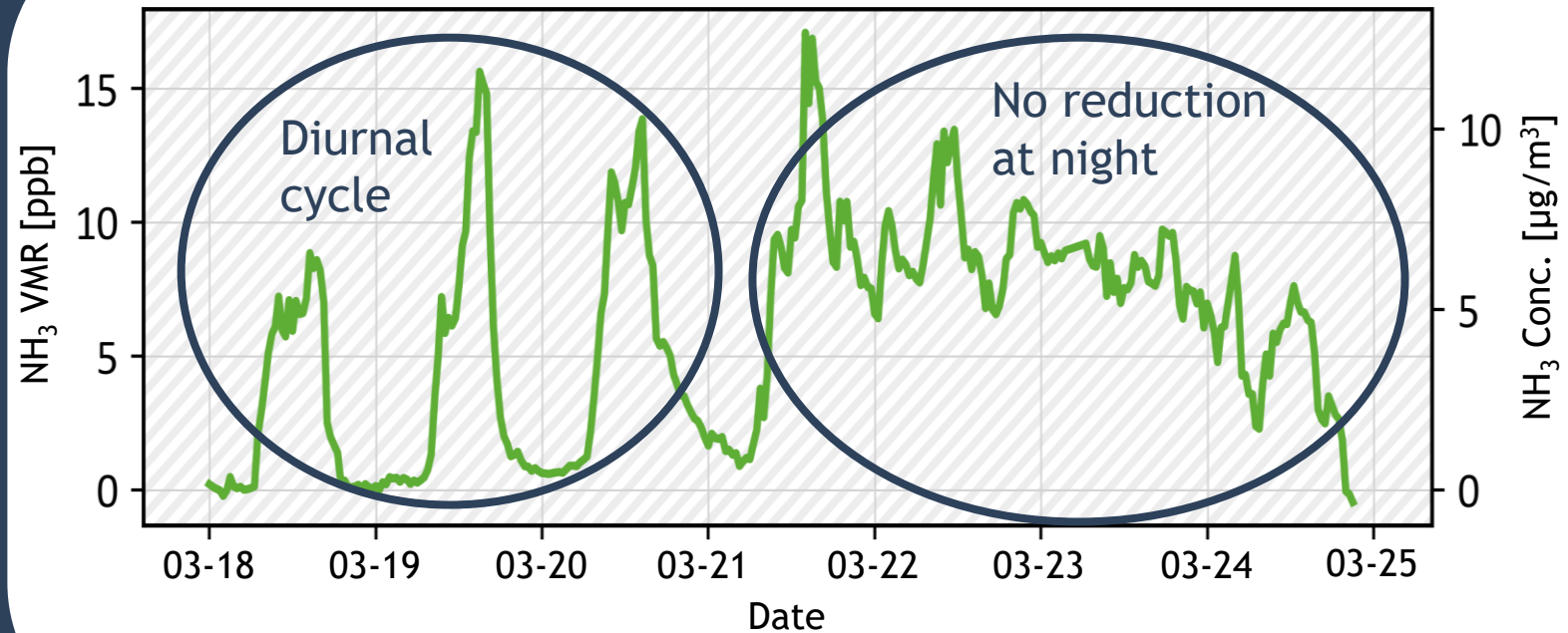


One year of measurements at Neuglobsow, Germany



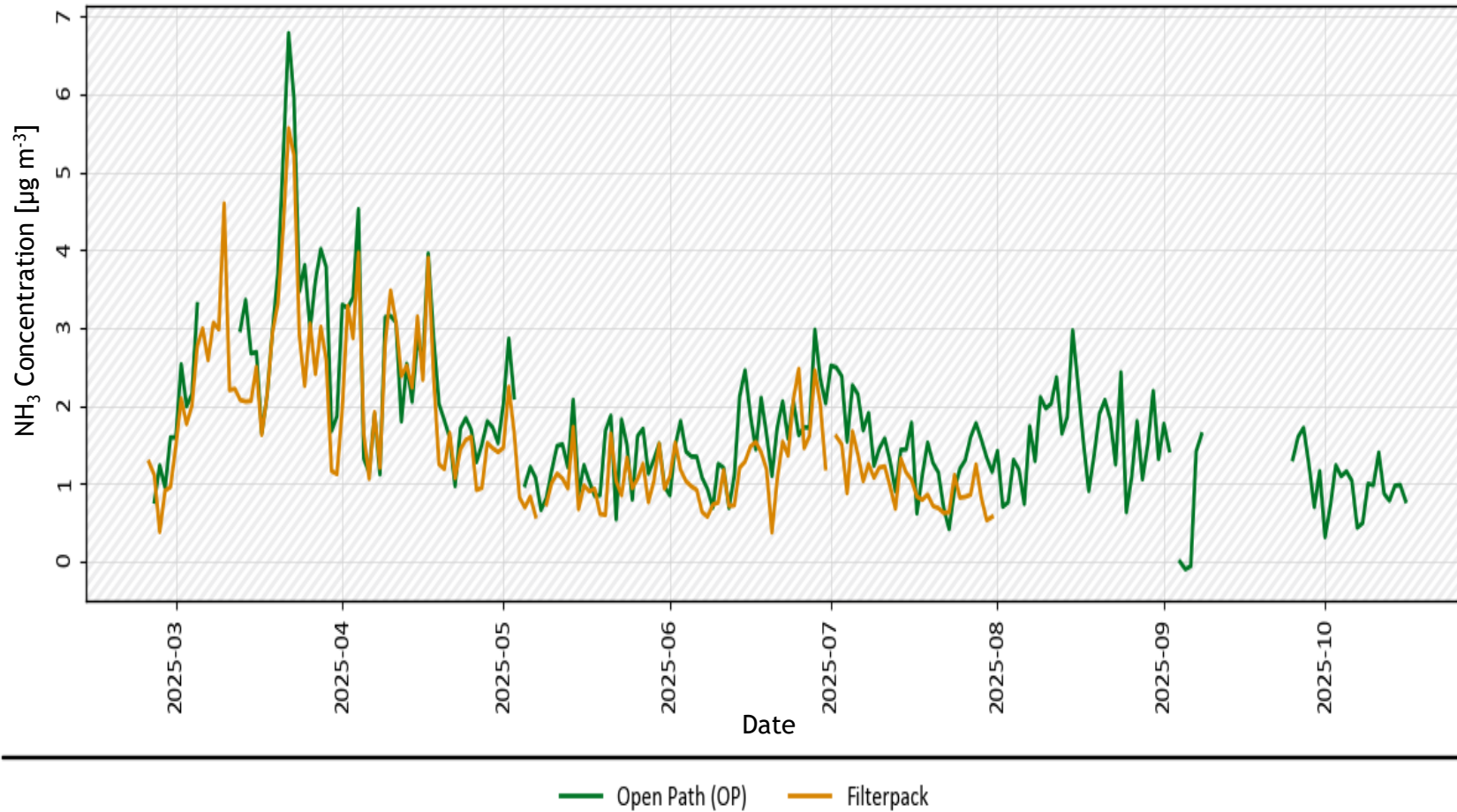
Data Coverage

18 Mar 2025 - 24 Mar 2025 Neuglobsow

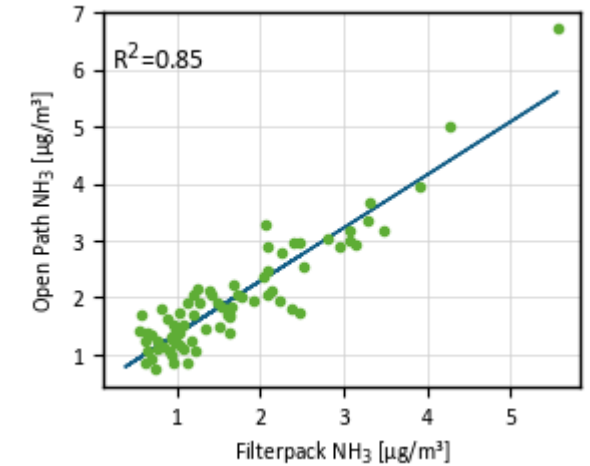


Validation against established NH₃ Measurement Methods

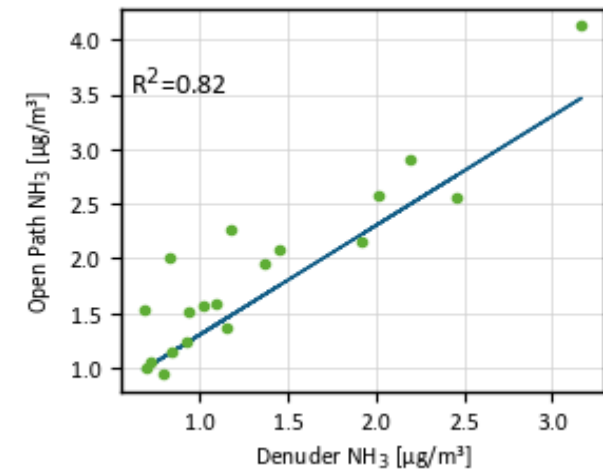
Filterpack and Open Path Daily Averages



Correlation to Filterpack



Correlation to Denuder





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 interference 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.

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

The screenshot displays a software interface with several windows:

- _Opti_RetroSearch_withWebcam**: A code editor window containing the following code:

```
; Set Retro number (1,2,...) on which the telescope will be adjusted.  
; Mark expected position of retro reflector in camera picture with cliprect frame, see camera device window  
Retro=2  
  
;-----no adjustment necessary below this line-----  
r=Retro-1  
dmotorx=config.CameraCalib[0]-config.CameraCalib[4]  
dmotory=config.CameraCalib[1]-config.CameraCalib[5]  
dpixx =config.CameraCalib[2]-config.CameraCalib[6]  
dpixy =config.CameraCalib[3]-config.CameraCalib[7]  
p0_X = config.TelescopeFOVPixel[0] ;x pixel of telescope FOV in Webcam picture  
p1_X = -dmotorx/dpixx ;x-scaling of telescope movement in webcam picture  
p0_Y = config.TelescopeFOVPixel[1] ;y pixel of telescope FOV in Webcam picture  
p1_Y = -dmotory/dpixy ;y-scaling of telescope movement in webcam picture  
SearchLight.status=1  
SearchLight.go  
SearchLight.waitFor  
webcam_tele.show  
webcam_tele.capture=true  
pause 1000  
webcam_tele.refresh  
Pixel_X=Webcam_Tele.target[0]  
Pixel_Y=Webcam_Tele.target[1]  
dPixX = Pixel_X - p0_X ; correct for offset  
dPixY = Pixel_Y - p0_Y  
Pos_X = p1_X*dPixX + Telescope_X_Azimuth.pos ; calculate the Motor Positions to align telescope  
Pos_Y = p1_Y*dPixY + Telescope_Y_Elevation.pos  
  
variables.moveall = %f(Pos_X,4), %f(Pos_Y,4)  
MoveToPosition.go
```
- Webcam_Tele**: A window showing a live video feed of a field with a reflector visible in the distance. It includes controls for Target Size, Av. Frames, Resolution, and Sensitivity.
- BGRangeCounts**: A window showing a plot of range counts over time, with a threshold line and a peak in the data.
- Meas**: A window showing a plot of measurement data over time.

Maintenance




Cleaning of filter & heat sink

 Site-dependent

 < 15 min

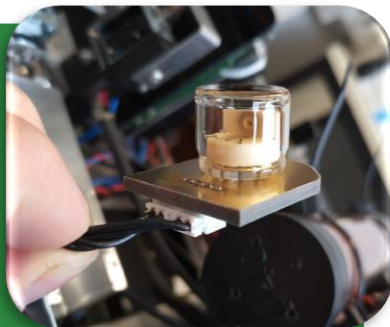
Rinsing with water

Lamp change

 2-3 x / year

 < 20 min

 1200€ / Lamp (without VAT)

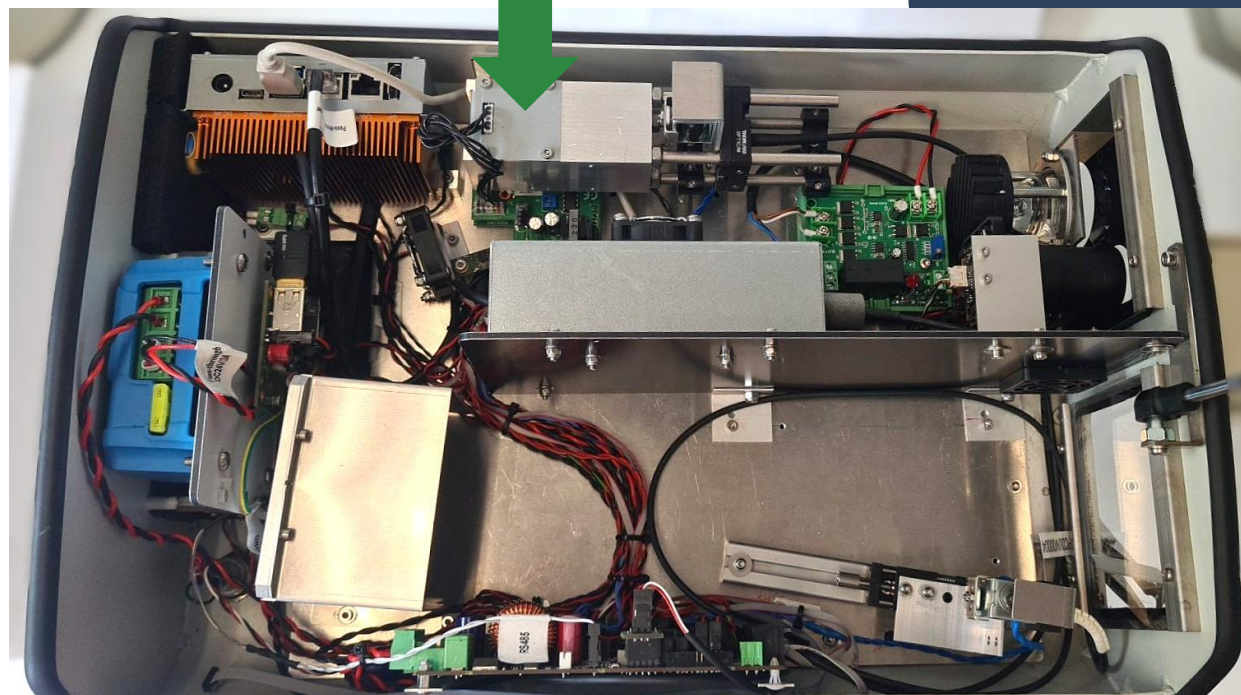


Dessicant change

 2 x / year

 < 15 min

Dessicant reusable after heating to 130° C

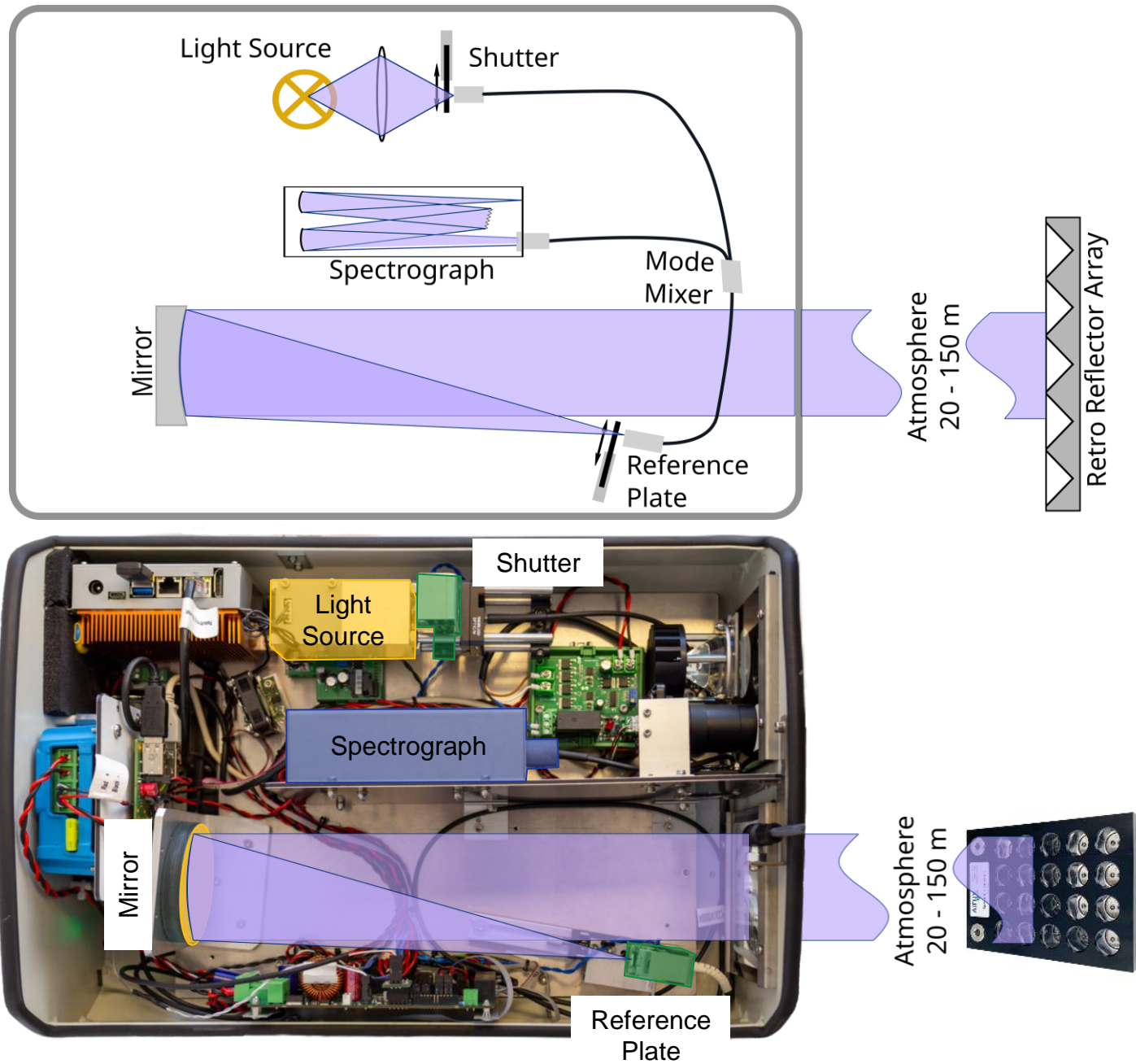


Cleaning of window (outside) & reflector

 Site-dependent

Standard glass cleaner

Internal Setup



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

