



airpointer[®] BTEX module



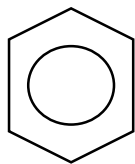
ON / OFF



POWER

miniGC

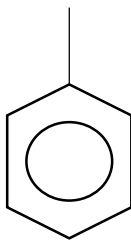
BTEX



Benzene

B

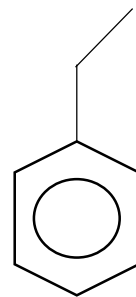
Bp = 80°C



Toluene

T

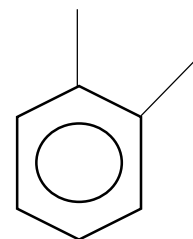
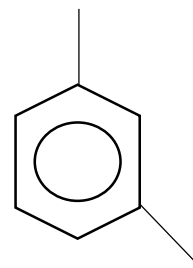
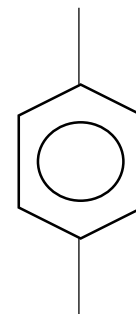
110°C



Ethylbenzene

E

136°C

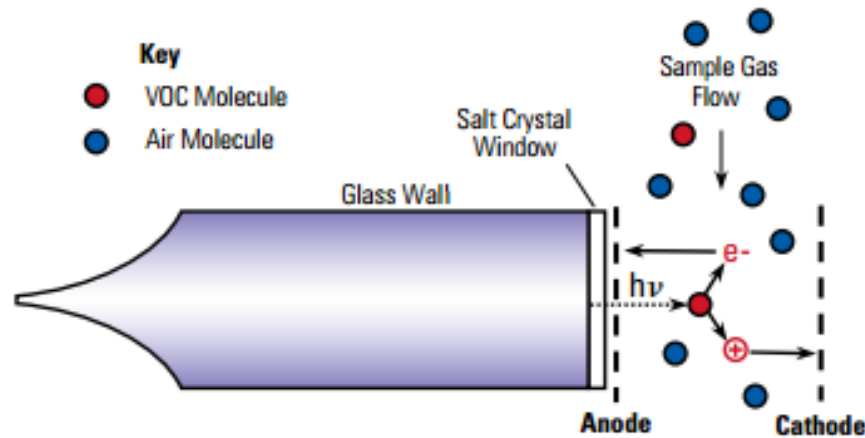


Xylenes

X

138 → 144°C

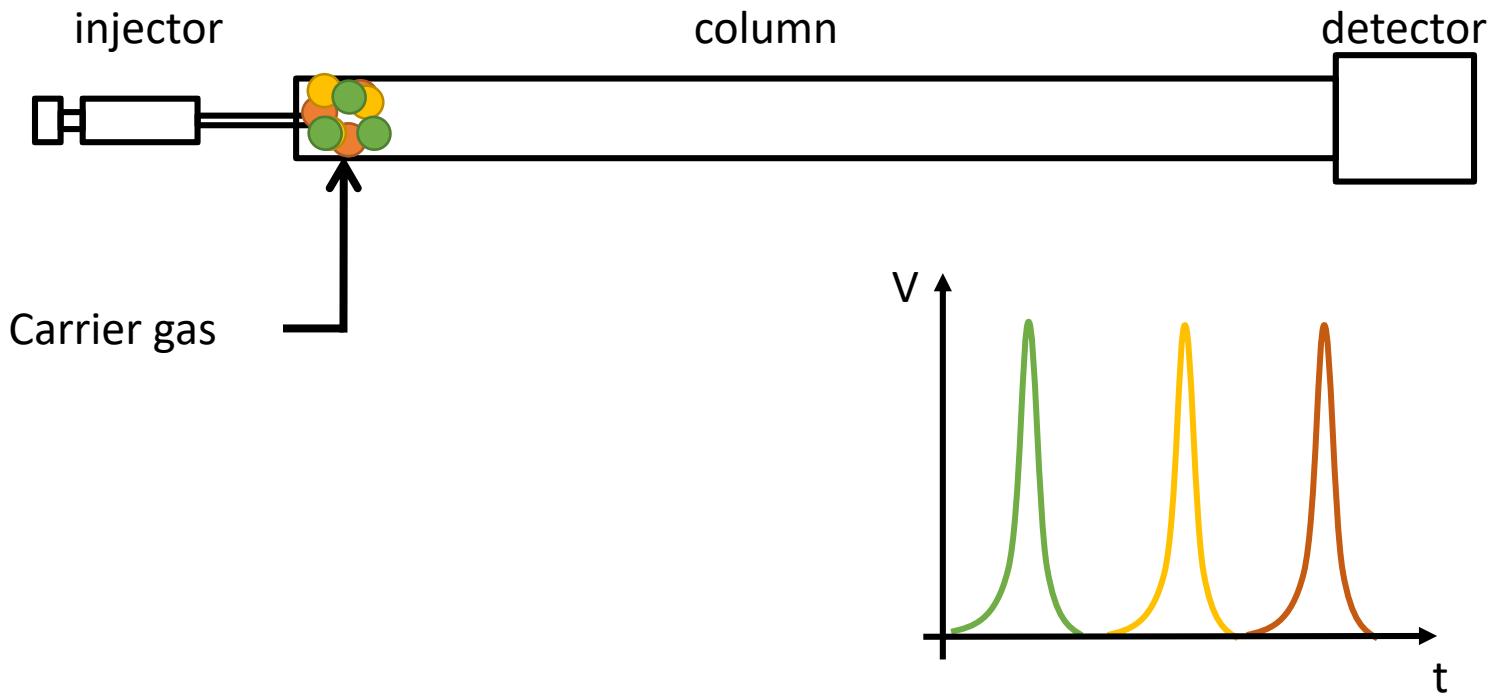
Photo-Ionization Detector (PID)



Energie: 10,6 eV

→ High sensitivity to unsaturated hydrocarbons

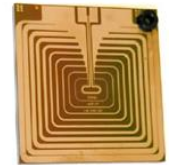
Gas Chromatography



Gas Chromatography

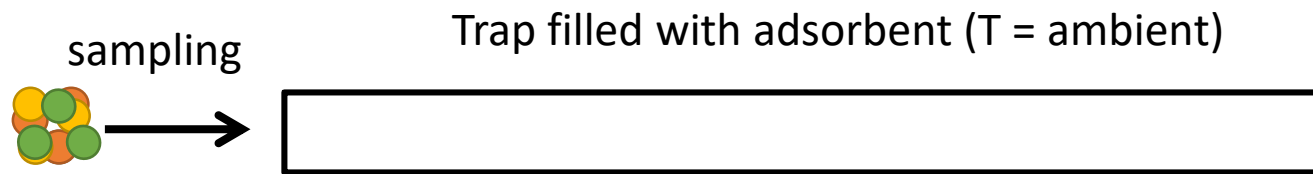


Classic GC-capillary column
vs
MEMS column



MEMS = Micro ElectroMechanical System

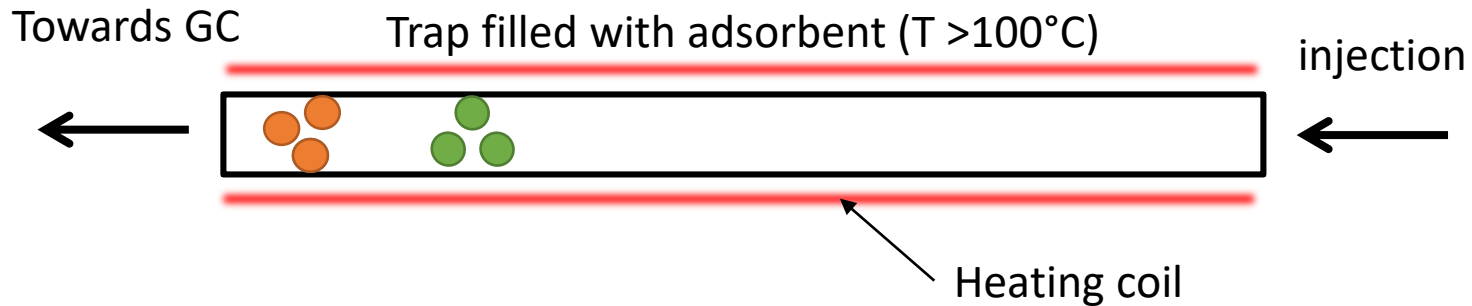
Preconcentration by thermodesorption



- Air molecules (N_2 , O_2 ...)
- VOCs (Volatiles)
- SVOCs (Semi-volatiles)



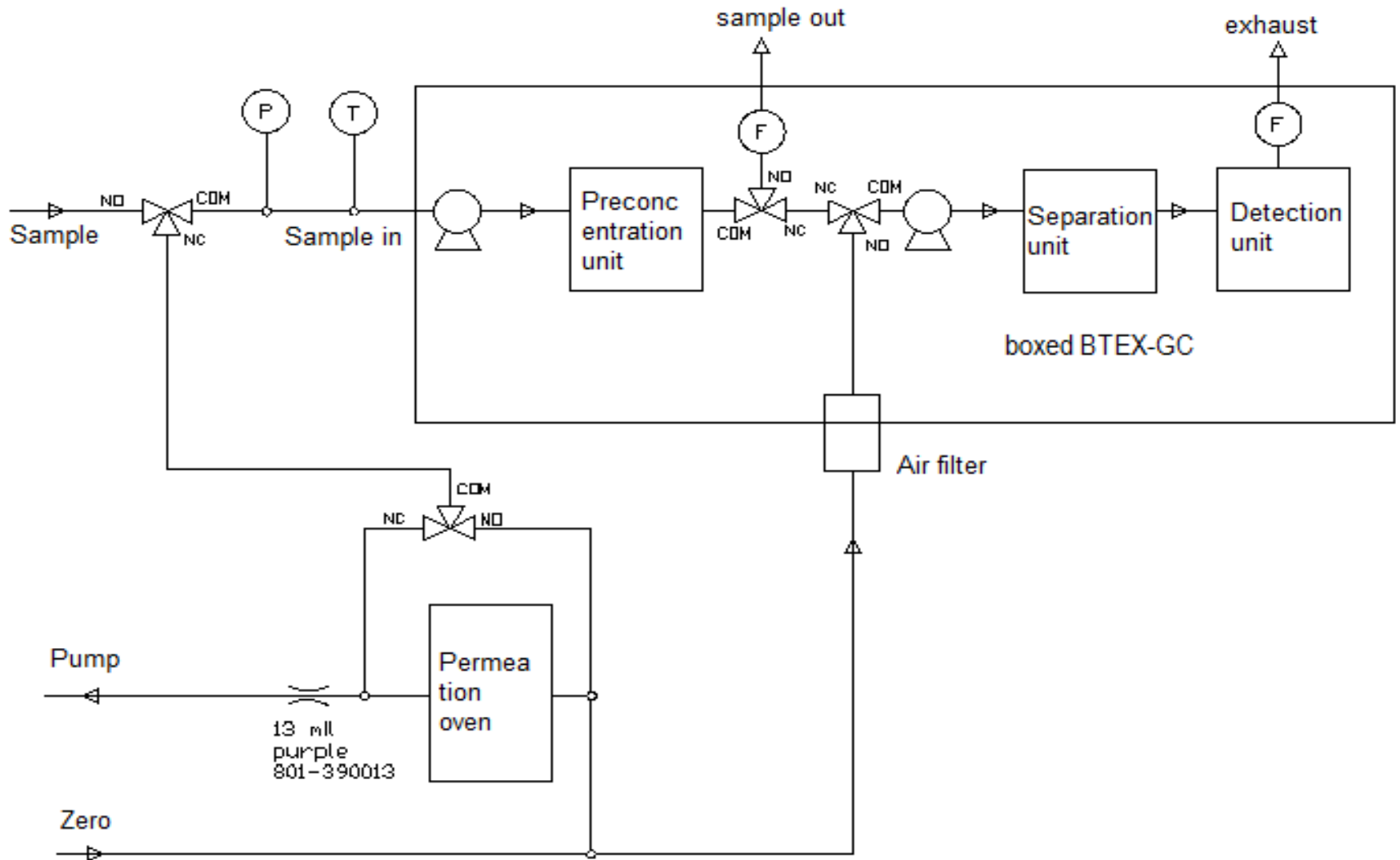
Preconcentration by thermodesorption



- Air molecules (N_2 , O_2 ...)
- VOCs (Volatiles)
- SVOCs (Semi-volatiles)

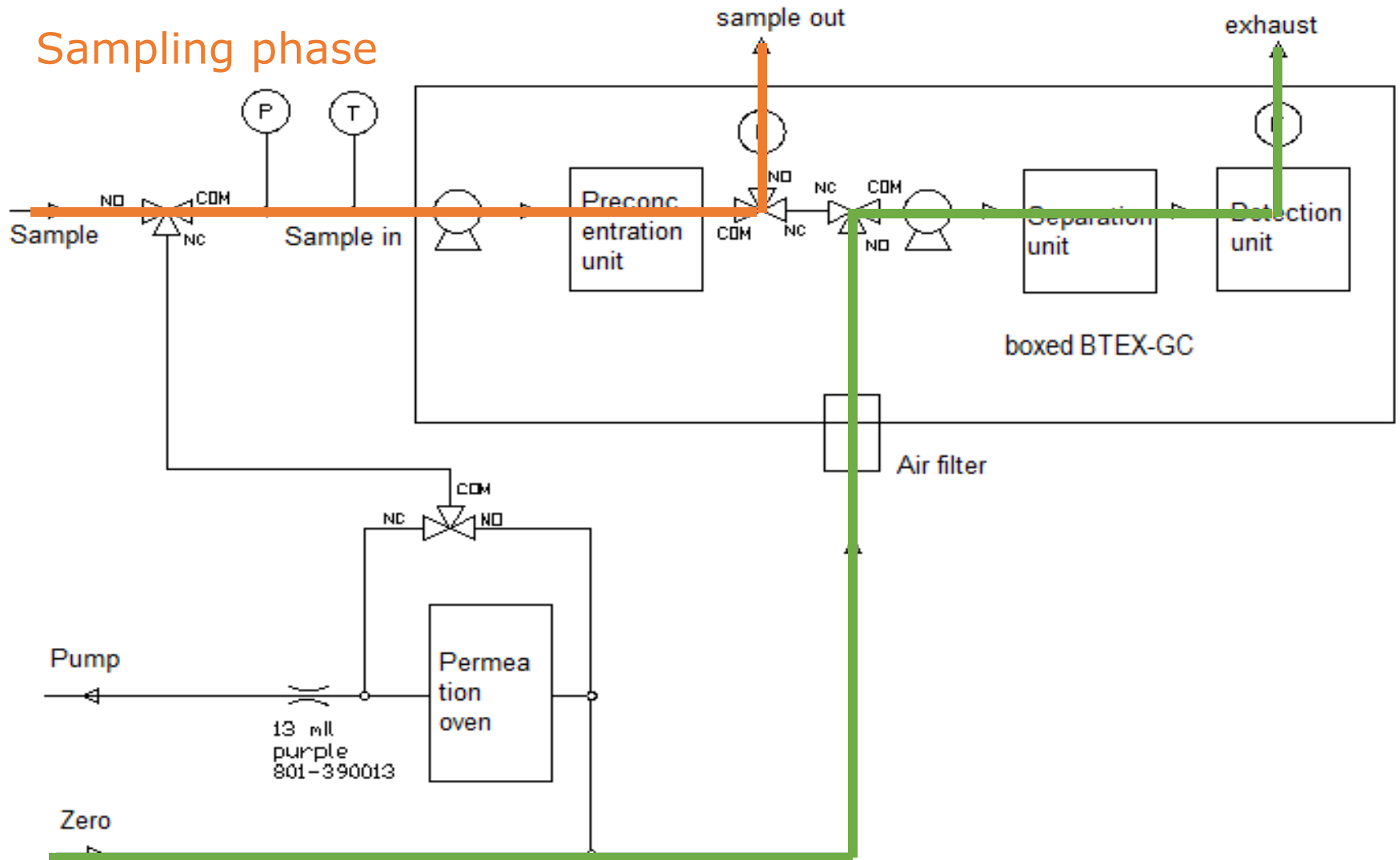


Flow diagram

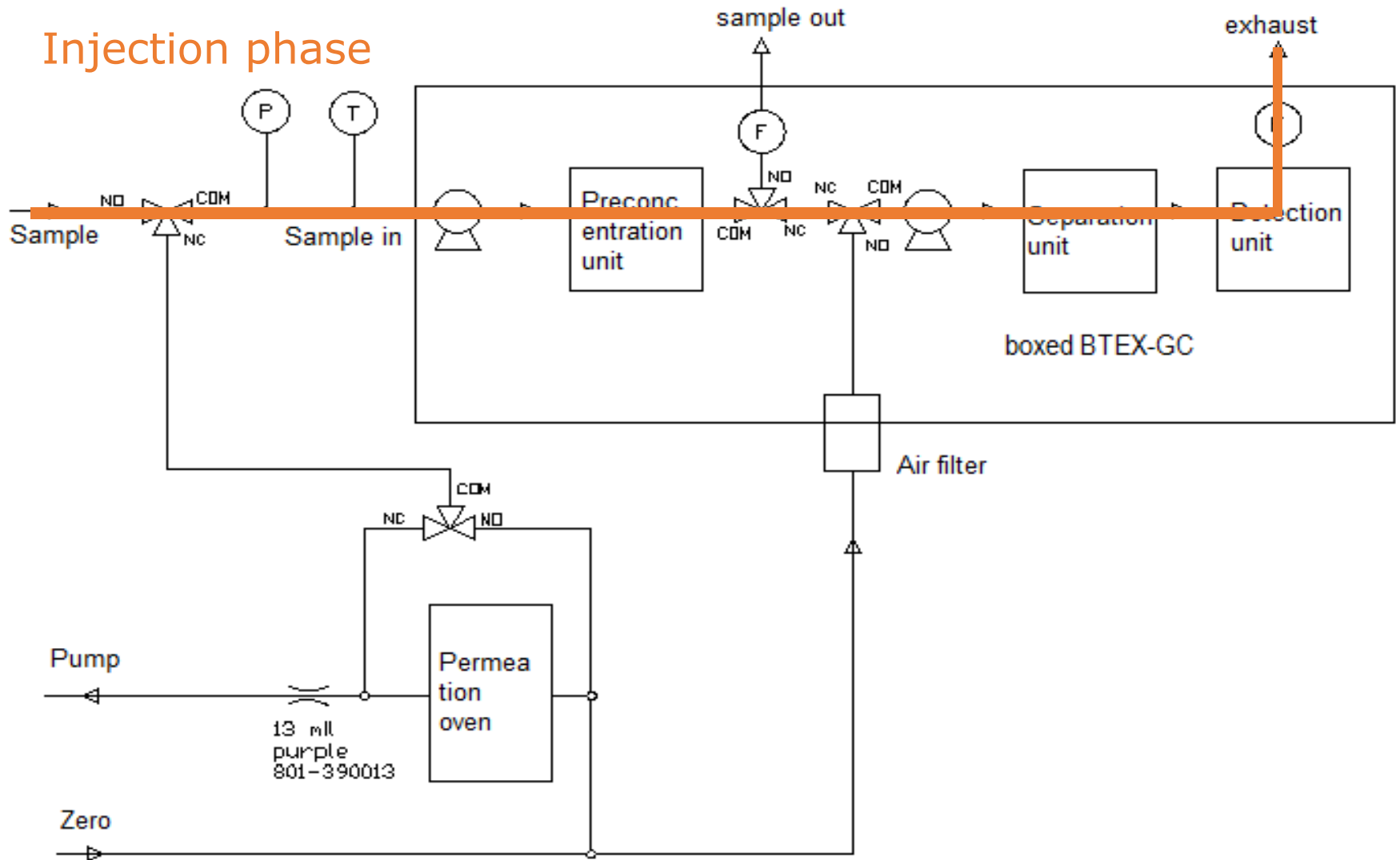


Flow diagram

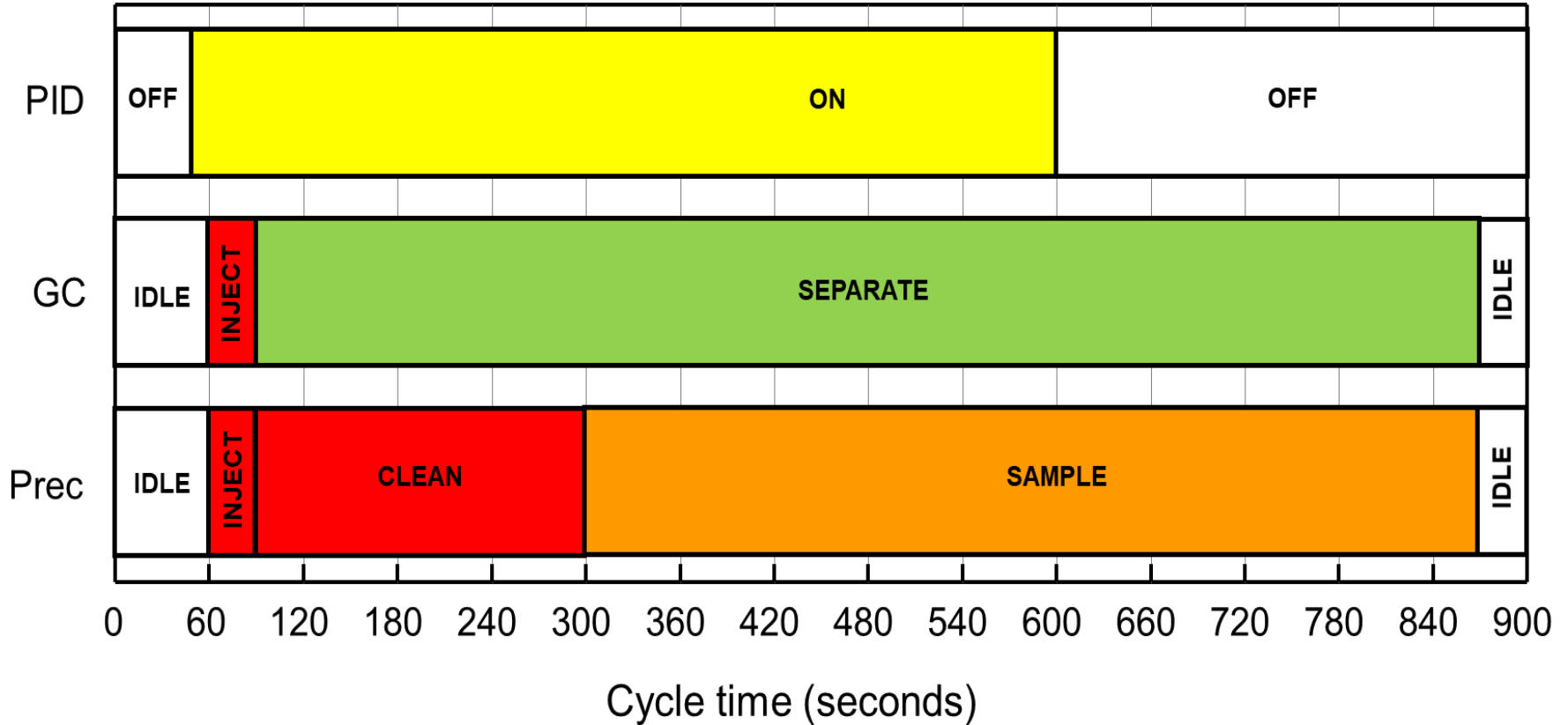
Sampling phase



Flow diagram



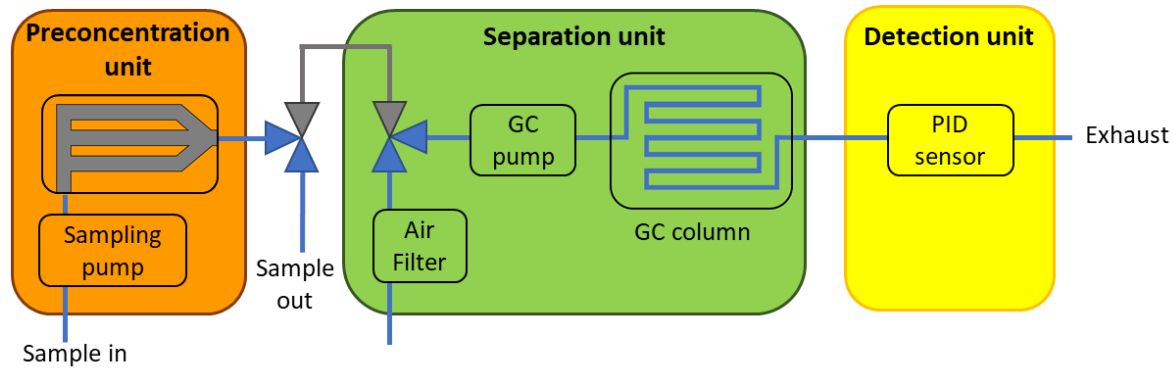
Cycles



15 minutes cycles, including 9 minutes data acquisition

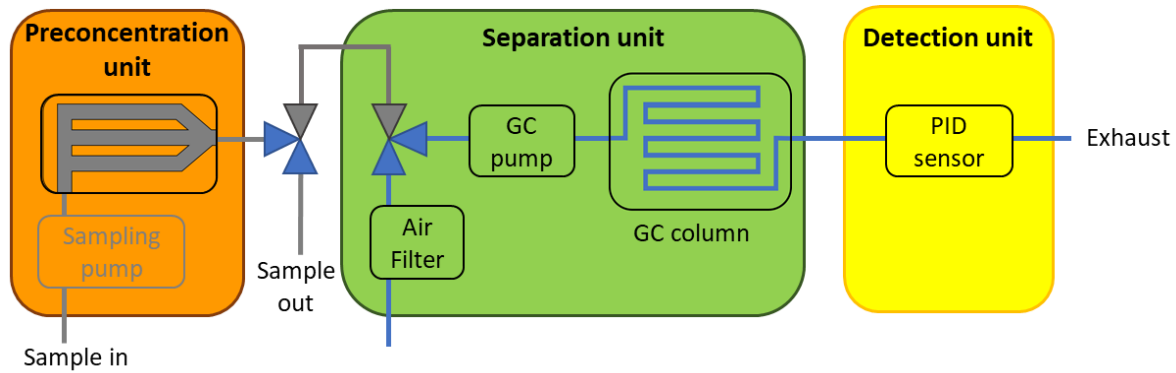
Cycles

Sampling phase



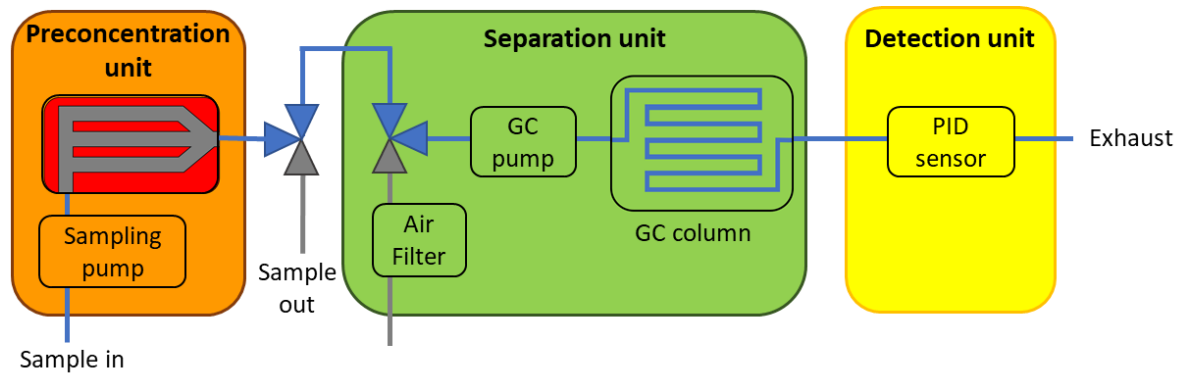
Cycles

Idle phase



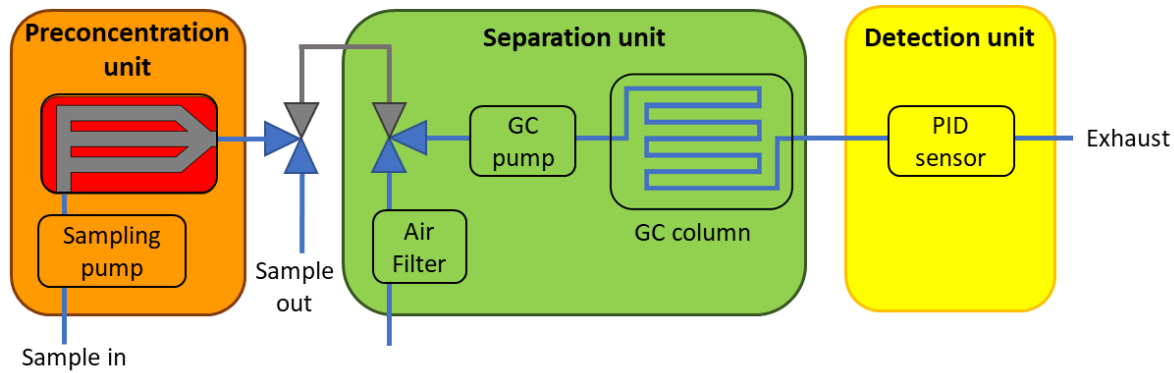
Cycles

Injection phase

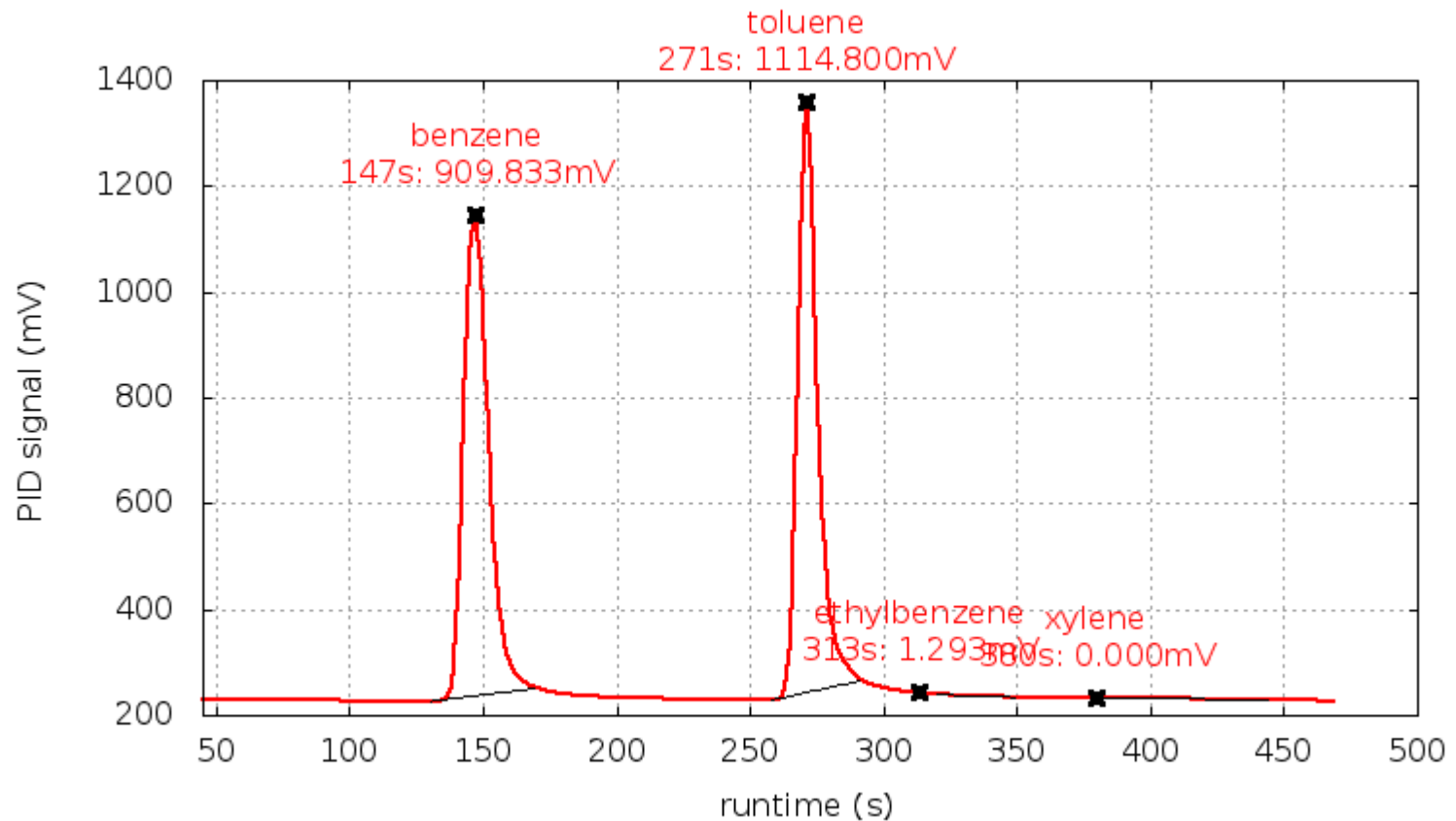


Cycles

Cleaning phase



Raw data



Parameters

Actual Values MiniGC 1 [Diagram](#)

no calibration active next automatic calibration cycle starts: 20170111 02:00:00

Parameter	Value	Unit	Status: BS-FS-SS
Benzene	0.64	ppb	0 0 0
Toluene	0.66	ppb	0 0 0
Ethylbenzene	0.08	ppb	0 0 0
Xylene	0.19	ppb	0 0 0

Benzene_all (25/6)	0.64	ppb
Toluene_all (25/7)	0.66	ppb
Ethylbenzene_all (25/8)	0.08	ppb
Xylene_all (25/9)	0.19	ppb
Benzene_peak_height (25/12)	13.6	mV
Toluene_peak_height (25/13)	21.0	mV
Ethylbenzene_peak_heig (25/14)	2.2	mV
Xylene_peak_height (25/15)	2.7	mV
Benzene_baseline (25/18)	241.3	mV
Toluene_baseline (25/19)	249.1	mV
Ethylbenzene_baseline (25/20)	230.8	mV
Xylene_baseline (25/21)	231.9	mV

SampleFlow (25/51)	186.5	ml/min	SensorFlow (25/52)	4.6	ml/min
SamplePress (25/53)	969.9	mbar	SampleTemp (25/54)	12.8	°C
PermT (25/49)	49.9	°C	PowerToPerm (25/50)	41.6	%

This document is generated by linsens, the sensor part of the rOSy system Copyright by www.recordum.eu 20170110 16:21:13

1 pressure sensor

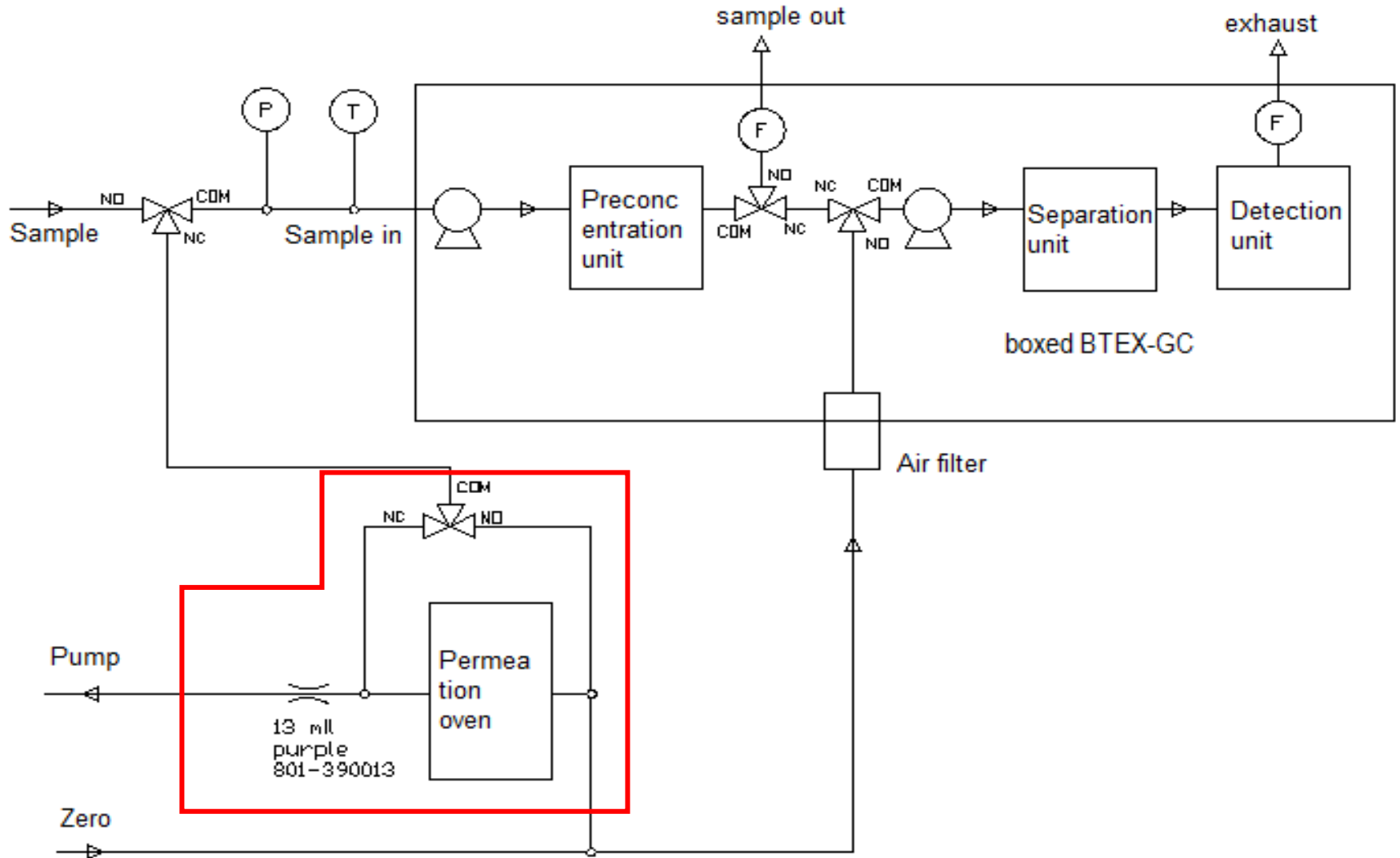
1 to 2 temperature probes

2 flow sensors

Calibration

- Calibration using external cylinders
- Daily span check with permeation tubes and zero check with zero air

Internal Span Module (ISM)



Preventive maintenance

Every 6 months:
change the PID lamp and the filter

Every 2 years:
Change the pumps

Troubleshooting

In case of doubt: check the raw data!

Flow issues in the preconcentrator or in the column will show completely different symptoms:

Preconcentrator:

lower flow = lower quantity sampled = smaller peaks

Column:

lower flow = lower velocity = longer retention times

Troubleshooting

A PID always drifts: daily span checks, frequent recalibration or correction, lamp cleaning or replacement are important

Thank you for your attention!