



EP-DT  
Detector Technologies



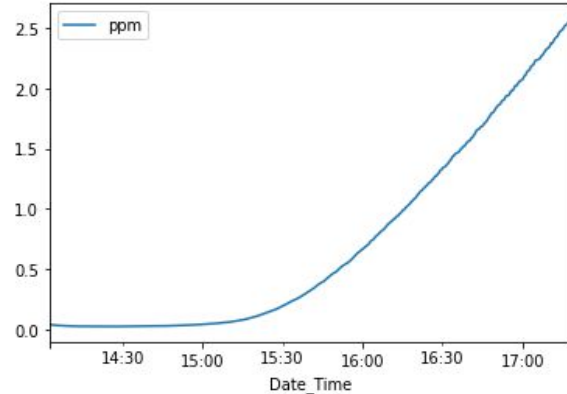
# Ecogas - HF measurements

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Ecogas meeting - 28/04/2021

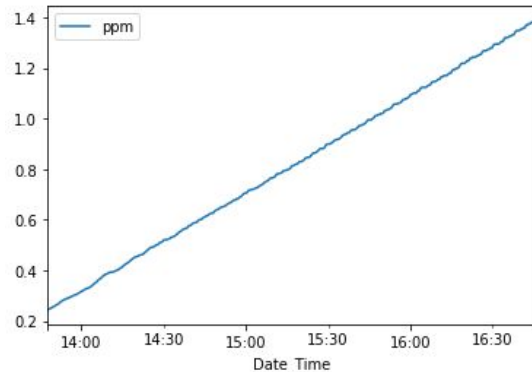
# HF measurements - Conditions

- An extra measurement for Ecomix 2:

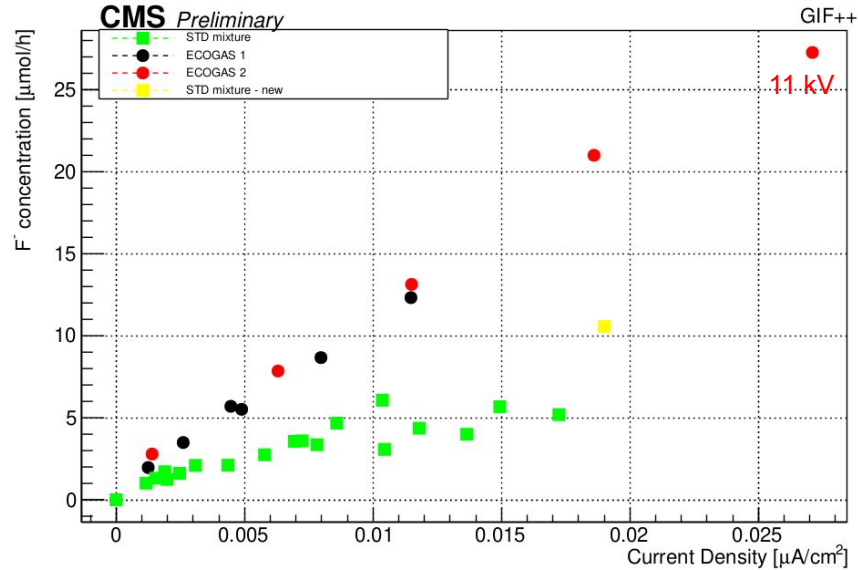


- The chamber voltage was changed from the stability (4 kV) to the measure voltage (11 kV) at 14:22.
- 30 minutes after we can see the concentration increasing.

- Measurements with Standard gas (95.2 %  $C_2F_2H_4$ , 4.5 %  $iC_4H_{10}$ , 0.3 %  $SF_6$ )
  - We agreed 4 points at the following voltages: 9800 V, 9600 V, 9400 V, 9000 V.
  - We have the first result at 9800 V.



# HF measurements - results



- **OBS:** Before, the point at 11 kV for ECOGAS 2 was with concentration  $\sim 40 \mu\text{mol}/\text{h}$

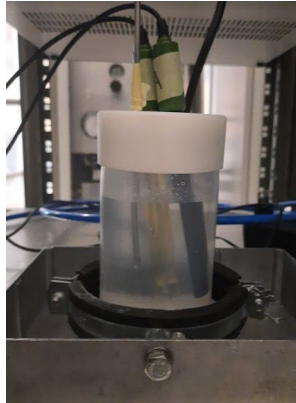
You can access this table [here](#)

ECOMIX2				
Date	Voltage (V)	Current density ( $\mu\text{A}/\text{cm}^2$ )	Rate ( $\mu\text{mol}/\text{h}$ )	OBS
12 April 2021	10600	0,0186	21	-
13 April 2021	10200	0,0115	13.9	Bad data: flowmeter variation during the measurement
15 April 2021	10200	0,0115	13.13	-
16 April 2021	9800	0,0063	7.85	-
19 April 2021	11000	0,0283	40.82	Bad data: problem in gas flow
20 April 2021	9000	0,0014	2.79	-
22 April 2021	11000	0,027	27.27	-
Standard Gas mixture				
Date	Voltage (V)	Current density ( $\mu\text{A}/\text{cm}^2$ )	Rate ( $\mu\text{mol}/\text{h}$ )	OBS
27 April 2021	9800	0,019	10.56	-

BACKUP

# Experimental procedure

- ISE meter: Hannah HI 5222
- Cleaning of both electrodes (indicator and reference electrodes);
- Measure sampling time: 30 s
- Calibration equation (09 of April): elog



Electrodes position

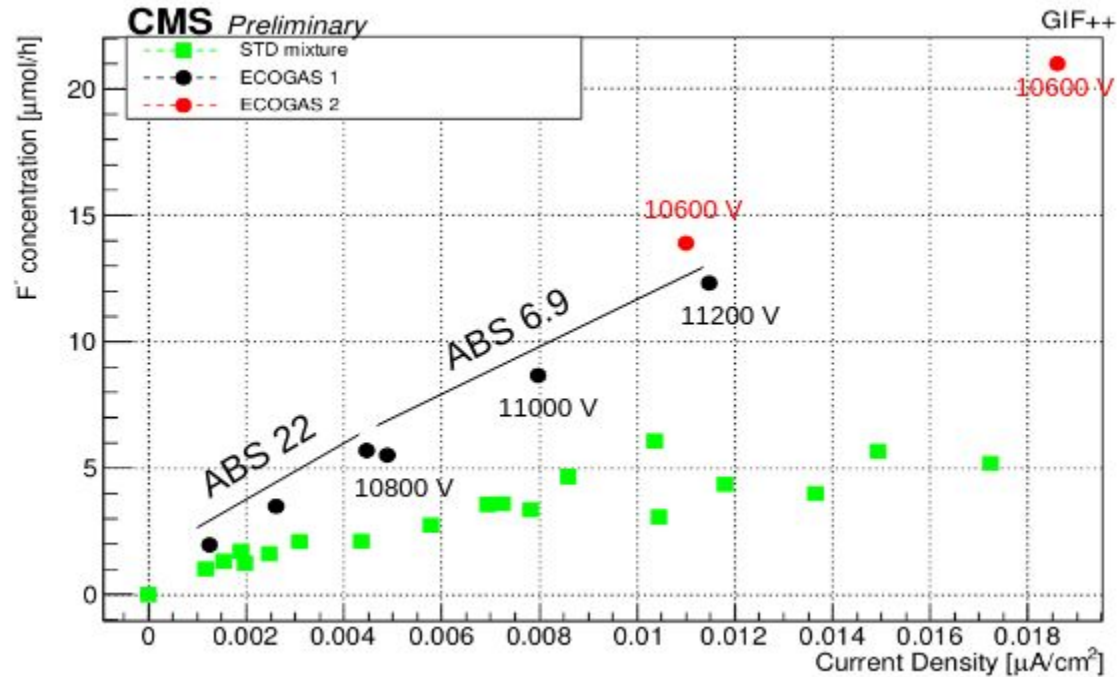
length of the pipe inside the  
tube ~ 9.8 cm

$$C_{F-} = e^{\frac{305.09 - V}{24.72}}$$

Concentration  
in ppm

Voltage  
measured  
in the ISE

# Previous meeting

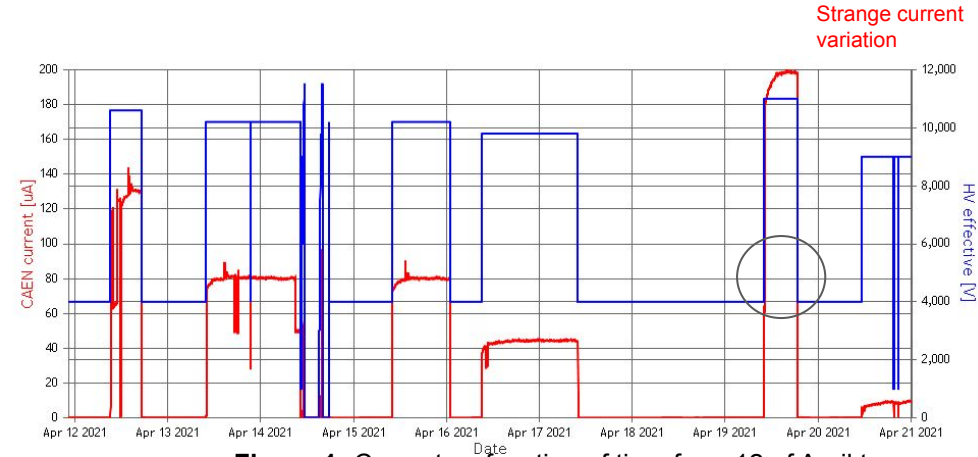


# HF measurements - Conditions

- Measurements with Ecomix 2 (35 % HFO, 4 %  $iC_4H_{10}$ , 1 %  $SF_6$ , 60 %  $CO_2$ )
  - In principle we agreed 4 points at the following voltages: 9800 V, 10200 V, 10600 V, 11000 V.
  - We noticed that unlike the other measurements taken in the past (STD gas mixture, Ecomix 1) the points for Ecomix 2 were not behaving linearly with the voltage. So we decided to measure a fifth point at 9000 V to confirm this.

Date	Voltage (V)	Current density ( $\mu A/cm^2$ )	Rate ( $\mu mo/h$ )
12 April 2021	9600	0,0186	21
13 April 2021	9200	0,01148571429	13.9
15 April 2021	9200	0,01148571429	13,13
16 April 2021	9800	0,0063	7,85
19 April 2021	11000	0,02825714286	40,82
20 April 2021	9000	0,001371428571	2,79

**Table 1:** Relevant parameters for the measurements



**Figure 1:** Current as function of time from 12 of April to 21 of April