EPDT-RPC3 status

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EP-DT
Detector Technologies

Outline

- Repair done
- Performance HFO mixtures
- Current situation EPDT chamber

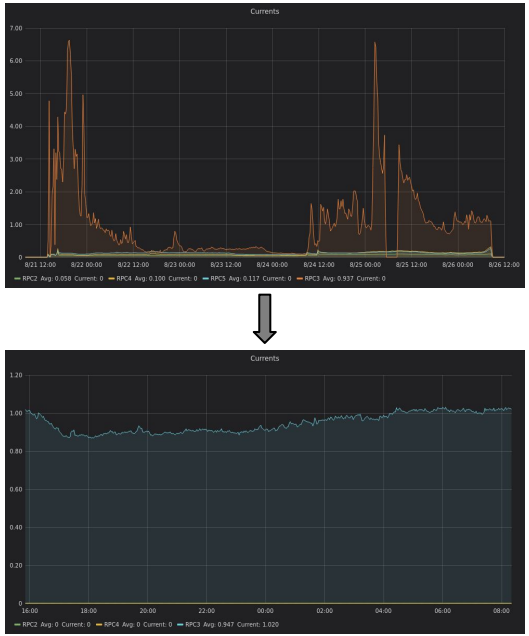
Repair of the chamber

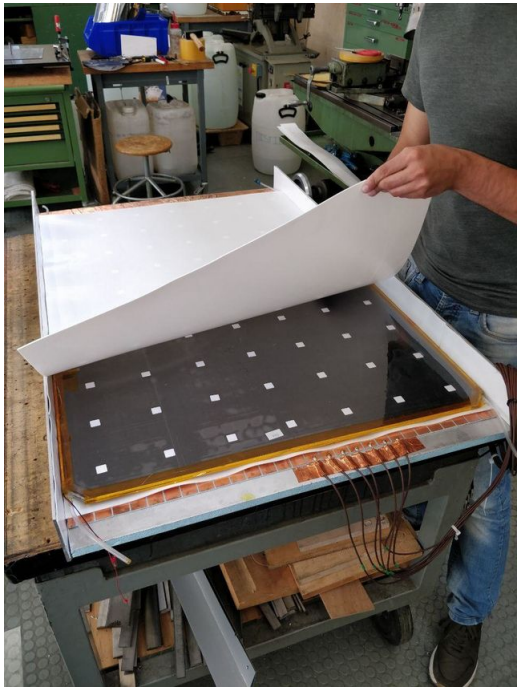
Work done:

- HV connector fixed
- New more robust frame
- Added layer of teflon + mylar around the gap

Results:

- Stability ***OK*** with std. mixture
- Stability ***OK*** with ECO1 mixture (50% CO2)
- Stability ***Not OK*** with ECO2 mixture (60% CO2)



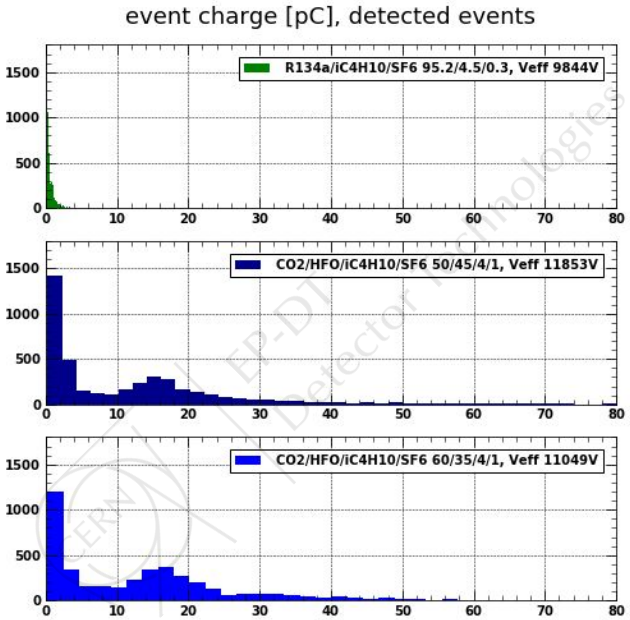


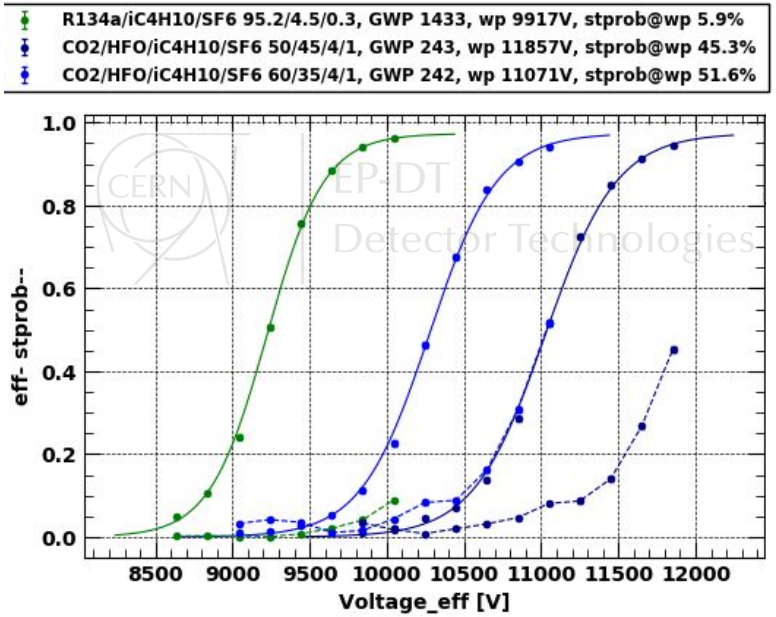
Performance of the gas mixtures

Small differences between 2 HFO mixtures:

1. Time resolution
2. Streamer fraction

MIX	GWP	RPC	Wp[V]	Eff	Stprob	Qav[pC]	Qst[pC]	Time_res[ns]	C-size	Current[uA]
R134a/iC4H10/SF6 95.2/4.5/0.3	1435	3	9950	94.6%	4.7%	0.6	9.5	3.8	2.9	1.10
CO2/R1234ze/R134a/iC4H10/SF6 50/22.25/22.25/4.5/1	243	3	11857	94.3%	45.3%	1.57	14.1	10.4	3.2	2.6
CO2/R1234ze/R134a/iC4H10/SF6 40/27.25/27.25/4.5/1	242	3	11071	94.3%	51.6%	1.75	14.2	15.9	3.2	2.11





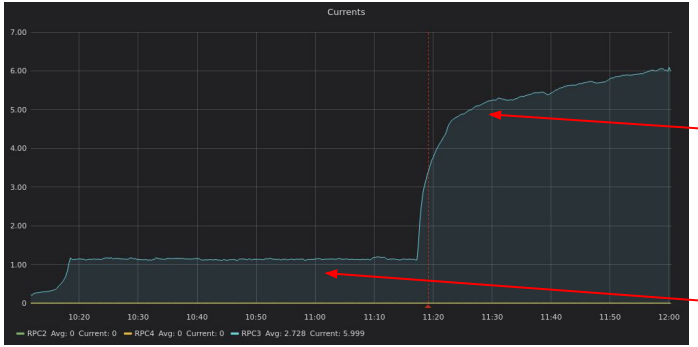
Current (both sense) issues

Issue with stability of the currents at ~ working point

Currents start drifting systematically

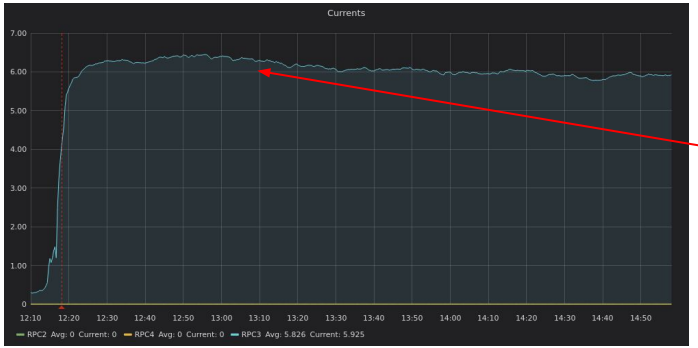
TODO:

- Understand the drift
- Mount the chamber back on the trolley



Drift starts here

Currents stable ~ 1 uA



Stabilizing after ~1 hour at 6 uA