GIF++ status update

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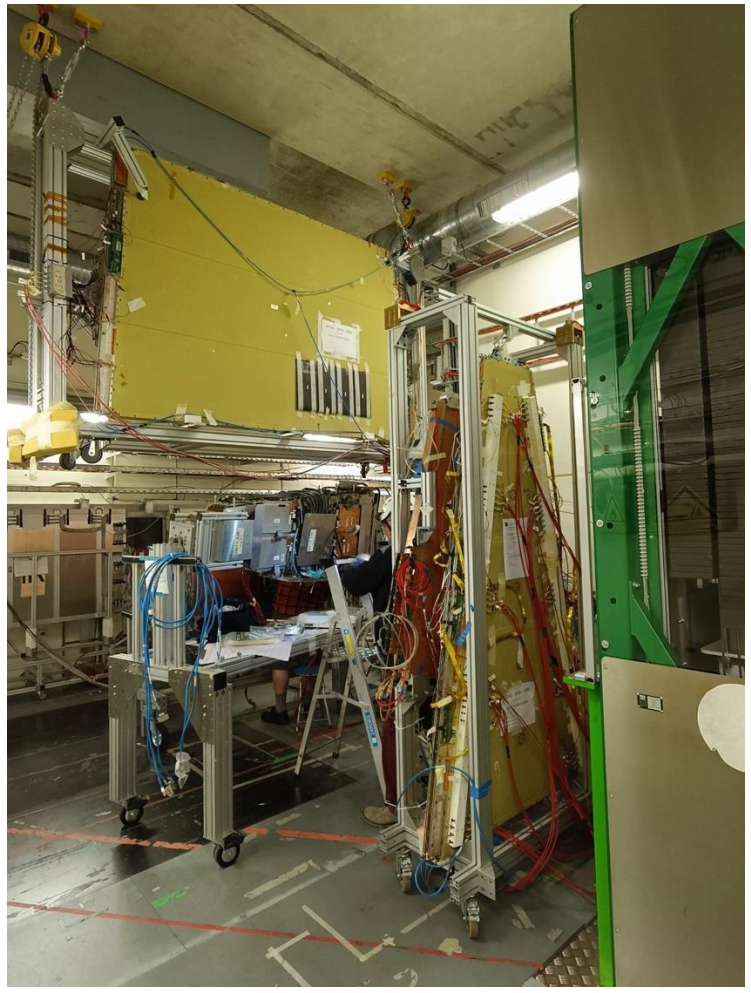
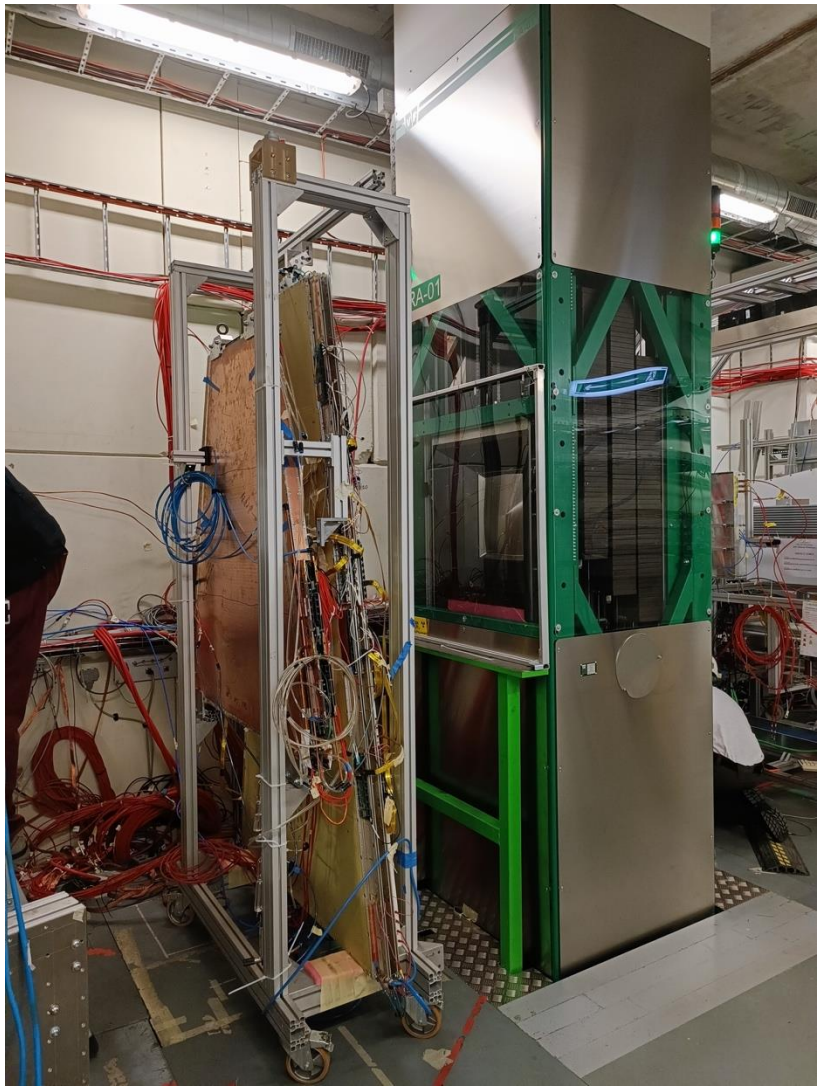
News

- Moved SM1-M40+sTGC trolley back in front of the source
- Starting 2 weeks test beam now and several source scans will be carried on
- sTGC still flushing CO2 and checking HV, but soon will switch to CO2-npentane
- Grafana monitoring unfortunately not working since a while due to issue on the PC on which was running
- Same issue also for P1 Grafana, LNF people are checking it and trying to resolve both Grafanas
- In the last few weeks, SM1-M40 have been checked further from the source showing no issues and almost constant current





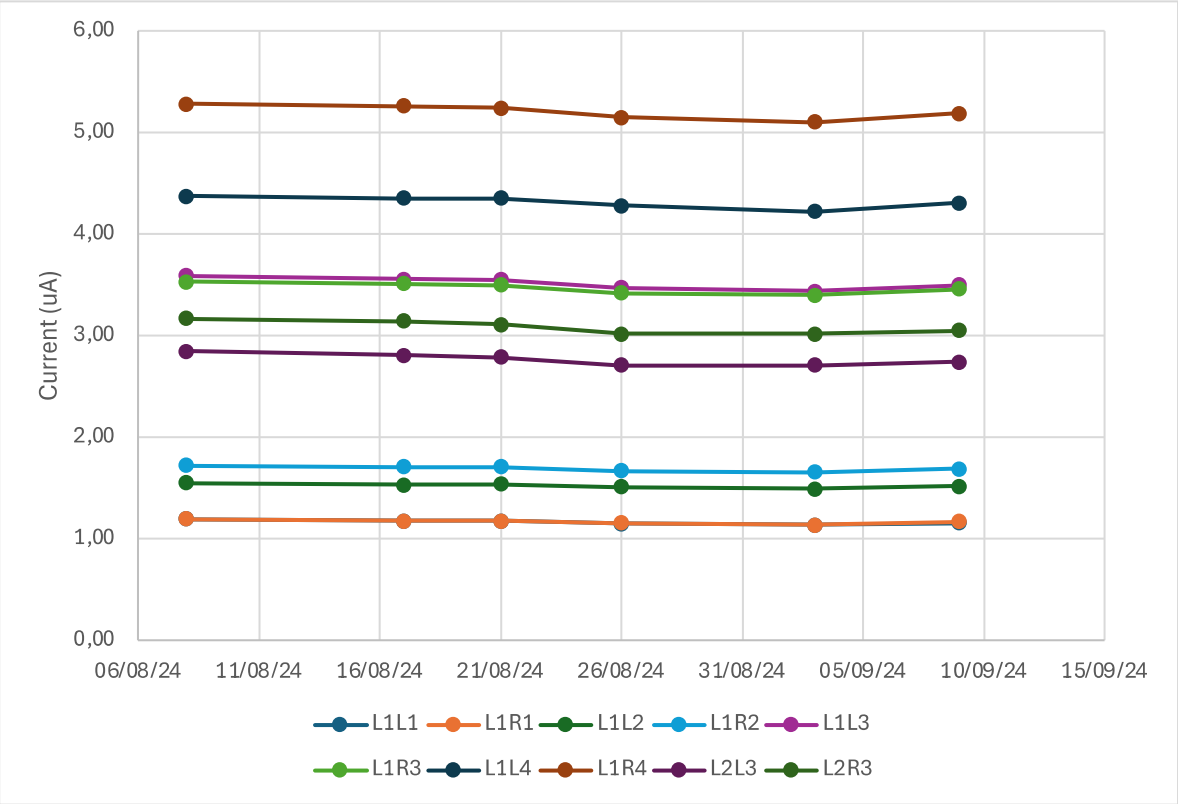
SM1-M40

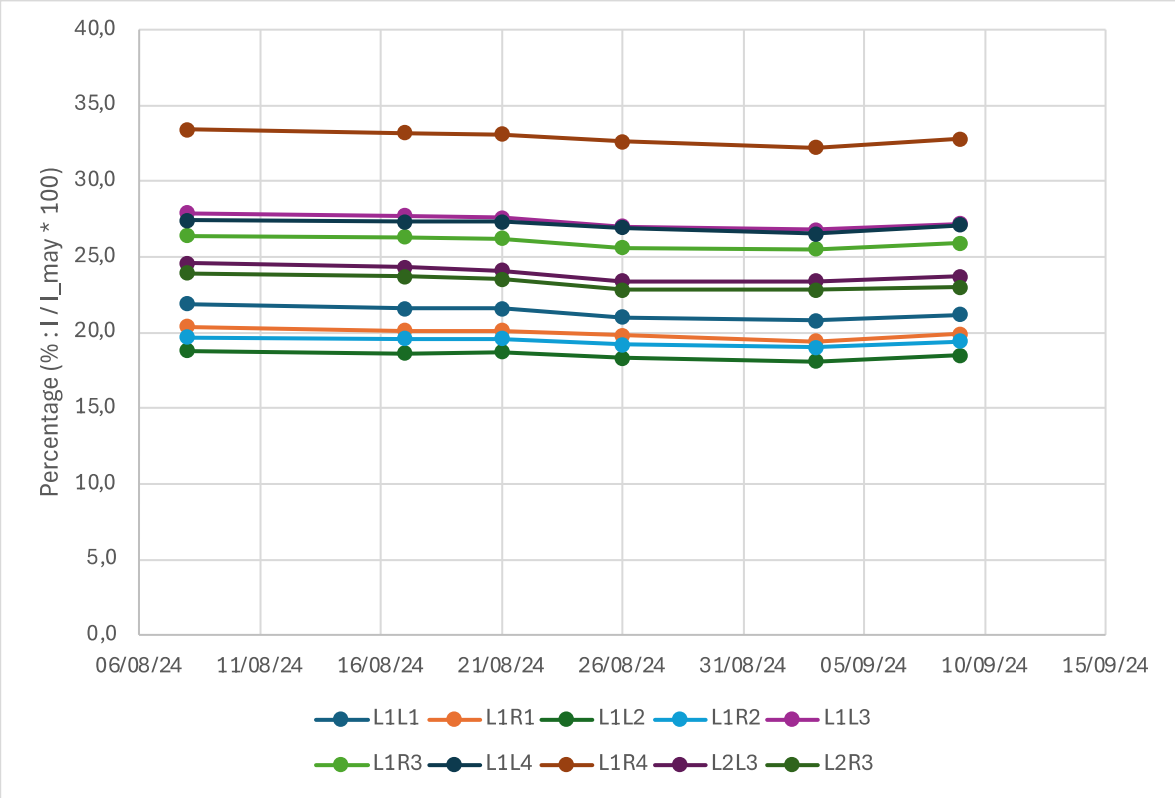
- Almost stable current in 1 month time
- Very little decreasing trend (order tens of nA) most likely due to atmospheric conditions

HV Channel	Current (uA) 05/24	Current (uA) 8/8/24	Current (uA) 17/8/24	Current (uA) 21/8/24	Current (uA) 26/8/24	Current (uA) 3/9/24	Current (uA) 9/9/24
L1L1	**5.47**	**1.20** (21.9%)	**1.18** (21.6%)	**1.18** (21.6%)	**1.15** (21.0%)	**1.14** (20.8%)	**1.16** (21.2%)
L1R1	**5.87**	**1.20** (20.4%)	**1.18** (20.1%)	**1.18** (20.1%)	**1.16** (19.8%)	**1.14** (19.4%)	**1.17** (19.9%)
L1L2	**8.23**	**1.55** (18.8%)	**1.53** (18.6%)	**1.54** (18.7%)	**1.51** (18.3%)	**1.49** (18.1%)	**1.52** (18.5%)
L1R2	**8.72**	**1.72** (19.7%)	**1.71** (19.6%)	**1.71** (19.6%)	**1.67** (19.2%)	**1.66** (19.0%)	**1.69** (19.4%)
L1L3	**12.85**	**3.59** (27.9%)	**3.56** (27.7%)	**3.55** (27.6%)	**3.47** (27.0%)	**3.44** (26.8%)	**3.50** (27.2%)
L1R3	**13.35**	**3.53** (26.4%)	**3.51** (26.3%)	**3.50** (26.2%)	**3.42** (25.6%)	**3.40** (25.5%)	**3.46** (25.9%)
L1L4	**15.92**	**4.37** (27.4%)	**4.35** (27.3%)	**4.35** (27.3%)	**4.28** (26.9%)	**4.22** (26.5%)	**4.31** (27.1%)
L1R4	**15.82**	**5.28** (33.4%)	**5.26** (33.2%)	**5.24** (33.1%)	**5.15** (32.6%)	**5.10** (32.2%)	**5.19** (32.8%)
L1L5 (200V)	**22.4**	**22.8** (101.8%)	**22.9** (102.2%)	**23.0** (102.7%)	**23.0** (102.7%)	**23.0** (102.7%)	**23.3** (104.0%)
L1R5 (350V)	**34.6**	**33.1** (95.7%)	**33.7** (97.4%)	**34.3** (99.1%)	**34.1** (98.6%)	**34.1** (98.6%)	**0.01** (cured?)
L2L3	**11.58**	**2.85** (24.6%)	**2.81** (24.3%)	**2.79** (24.1%)	**2.71** (23.4%)	**2.71** (23.4%)	**2.74** (23.7%)
L2R3	**13.26**	**3.17** (23.9%)	**3.14** (23.7%)	**3.11** (23.5%)	**3.02** (22.8%)	**3.02** (22.8%)	**3.05** (23.0%)

SM1-M40

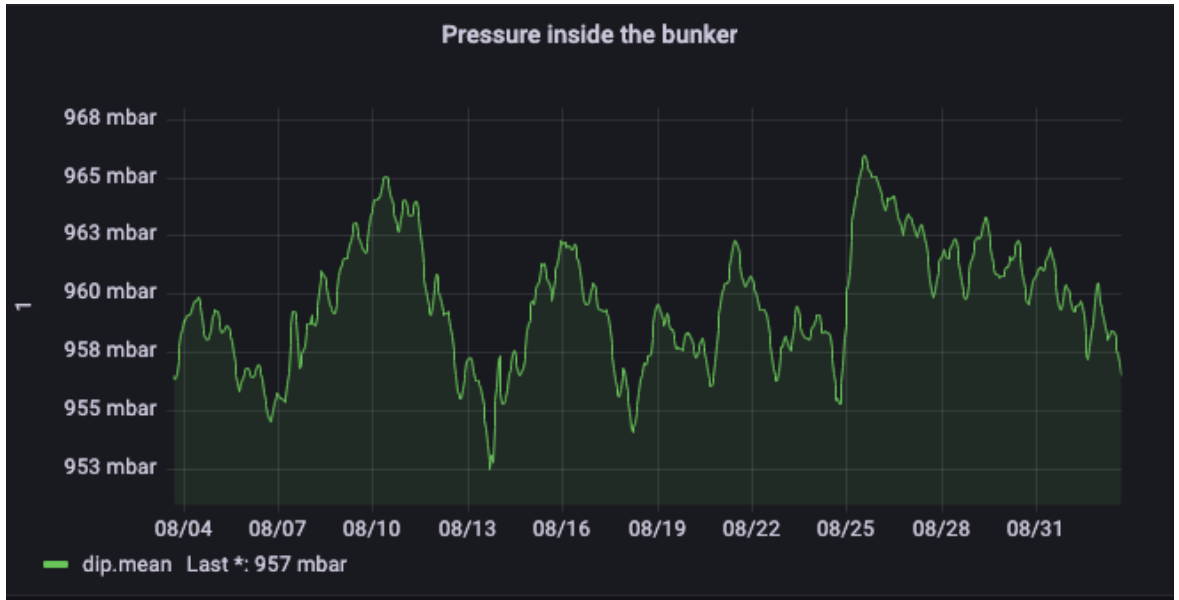
- Almost stable current in 1 month time
- Very little decreasing trend (order tens of nA) most likely due to atmospheric conditions

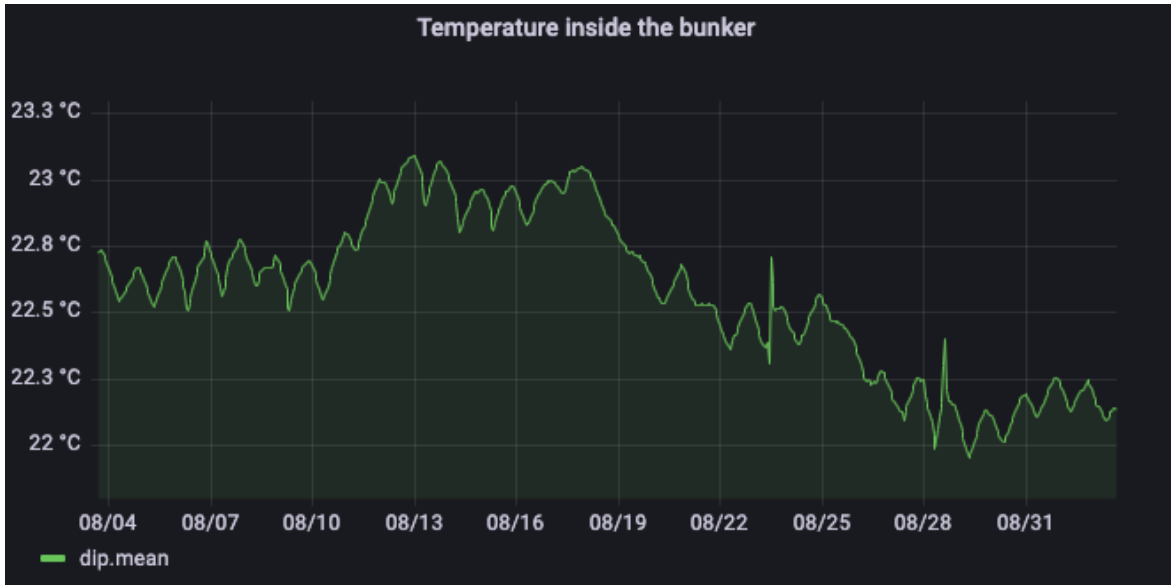




Environmental conditions

- Almost stable current in 1 month time
- Very little decreasing trend (order tens of nA) most likely due to atmospheric conditions
- Decreasing temperature in the last couple of weeks

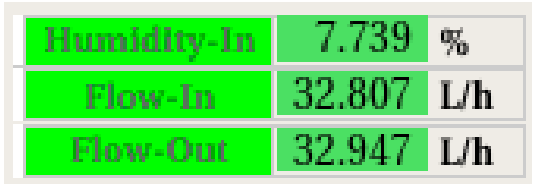




Back-up

SM1-M40

- Ar+5%CO_2+2%iC_4H_{10}
- Flux ~33 l/h
- RH ~8%



HV Channel	Current (uA) 05/24	Current (uA) 08/24	Ratio (%)
L1L1	5.47	1.20	21.9
L1R1	5.87	1.20	20.4
L1L2	8.23	1.55	18.8
L1R2	8.72	1.72	19.7
L1L3	12.85	3.59	27.9
L1R3	13.35	3.53	26.4
L1L4	15.92	4.37	27.4
L1R4	15.82	5.28	33.4
L1L5	22.4 (@200V)	22.8 (@200V)	101.8
L1R5	34.6 (@350V)	33.1 (@350V)	95.7
L2L3	11.58	2.85	24.6
L2R3	13.26	3.17	23.9

- Comparison with values before the test beam:
- ~20% of the previous current for PCB-1 and 2
- ~27% of the previous current for L1 PCB-3
- ~24% of the previous current for L2 PCB-3
- Almost equal fraction of current for L1 and L2
- Almost equal fraction of current for the 2 sides
- Larger difference for the PCB-4, probably due to different exposure to the source in the new position
- Ratio between different layers:
  - L2L3/L1L3 = 90.1% (05/24) and 79.4% (08/24)
  - L2R3/L1R3 = 99.3% (05/24) and 89.8% (08/24)

SM1-M40

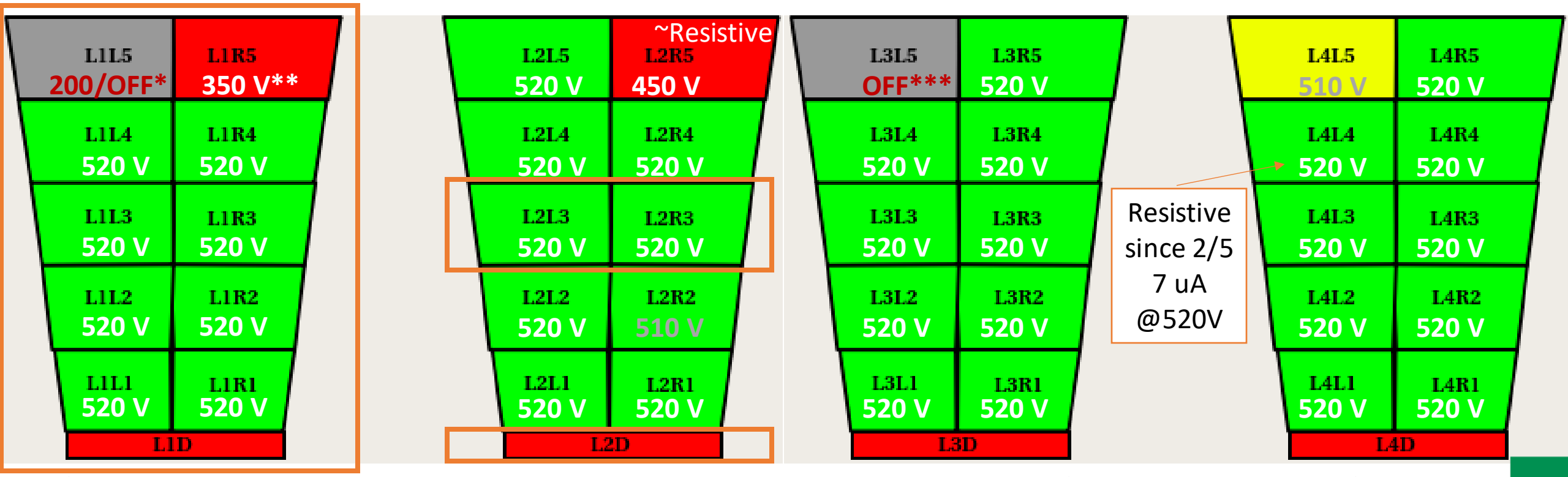
- Ar+5%CO_2+2%iC_4H_{10}
- Flux ~32 l/h
- RH ~8%

SM1				
L1L1	520.0	V	1.197	uA
L1R1	520.0	V	1.196	uA
L1L2	520.1	V	1.553	uA
L1R2	520.0	V	1.721	uA
L1L3	520.0	V	3.592	uA
L1R3	520.0	V	3.530	uA
L1L4	520.0	V	4.367	uA
L1R4	520.0	V	5.283	uA
L1L5	200.0	V	22.854	uA
L1R5	350.1	V	33.116	uA

CURRENTLY POWERED CHANNELS

L2L3	520.0	V	2.849	uA
L2R3	520.0	V	3.168	uA
L1D	240.1	V	0.603	uA
L2D	240.1	V	0.202	uA

HV range	# of HV sectors
$HV = 520\ V$	34/40 (85%)
$500\ V \leq HV < 520\ V$	2/40 (5%)
$450\ V \leq HV < 500\ V$	1/40 (2.5%)
$HV < 450\ V$	1/40 (2.5%)
OFF	2/40 (5%)



* Tested the channel -> shows resistive behaviour: 68.5 uA at 520V at attenuation 1 (neighbour with 10.5 uA)

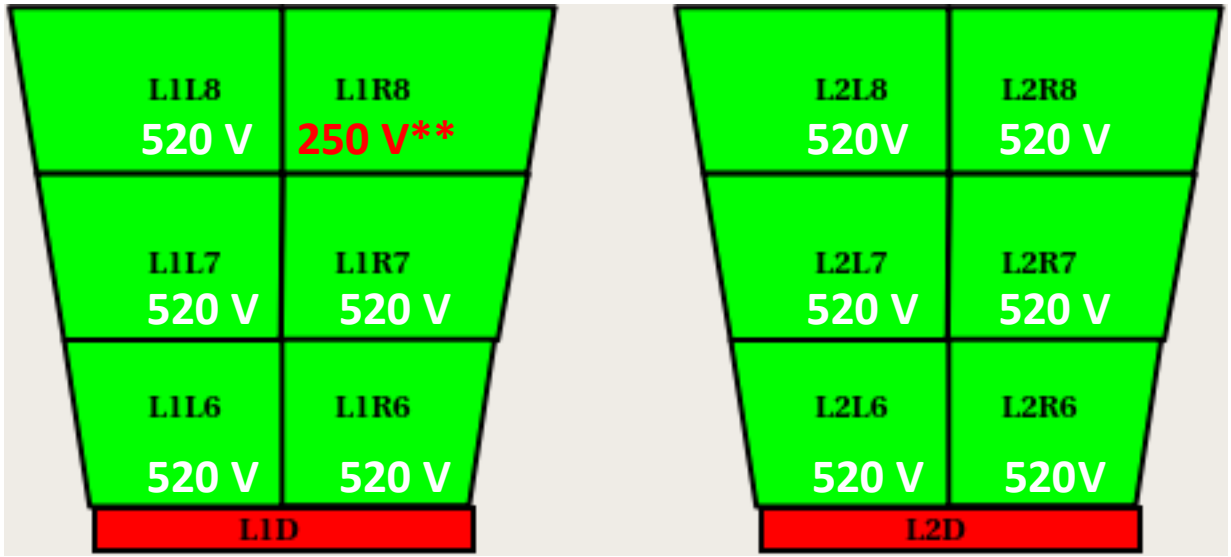
** Tested the channel -> shows resistive behaviour: ~60 uA at 520V at attenuation 1 (was 10.5 uA before switching)

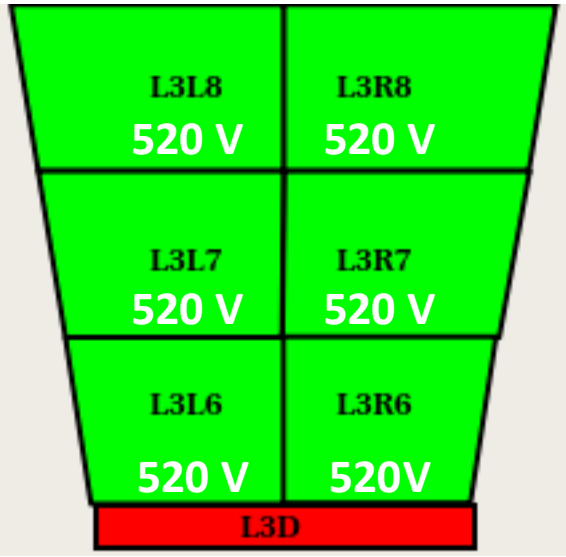
*** Tested the channel -> shows resistive behaviour: ~80 uA at 520V at attenuation 1 (neighbour with 13.9 uA)

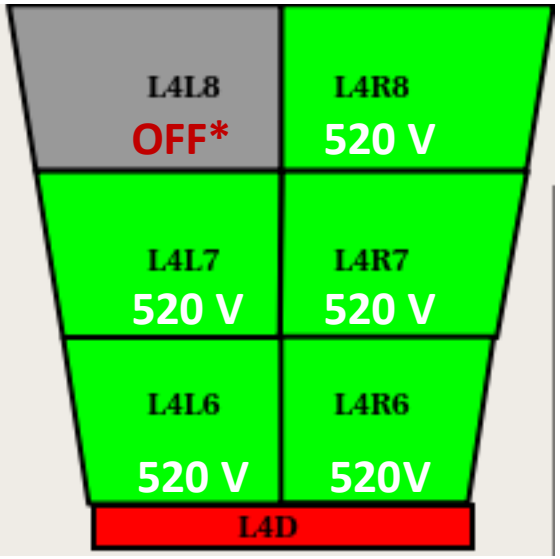
LM2-M40

- Ar+5%CO_2+2%iC_4H_{10}
- Flux ~33 l/h
- RH ~8%

HV range	Number of HV sectors
$HV = 520\ V$	23/24 (95.1%)
$500\ V \leq HV < 520\ V$	0/24 (0%)
$450\ V \leq HV < 500\ V$	0/24 (0%)
$HV < 450\ V$	0/24 (0%)
OFF	1/24 (4.2%)





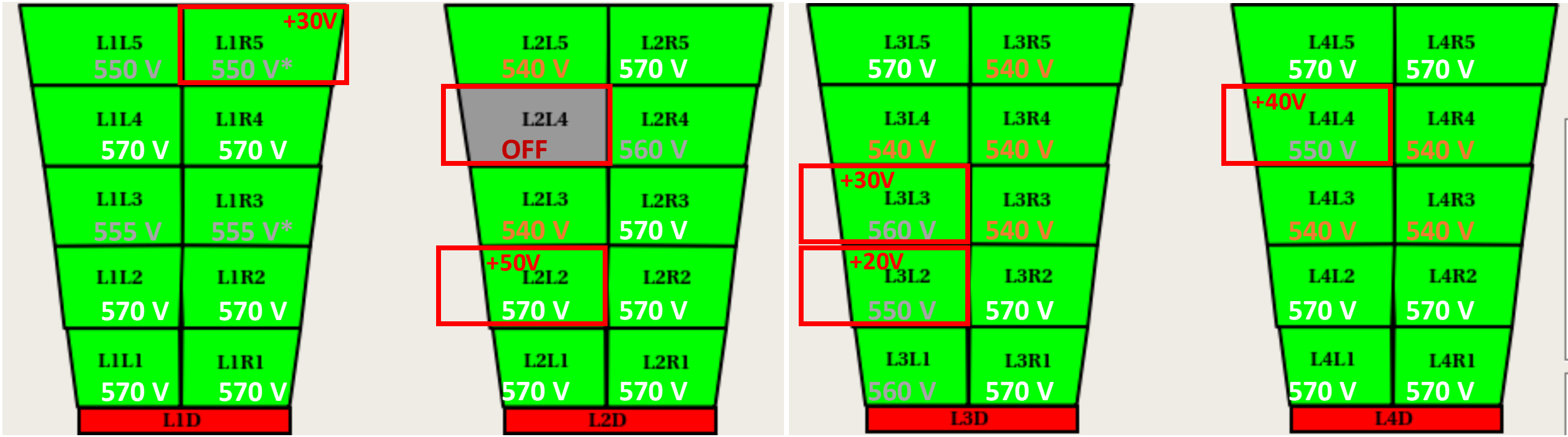


* Tested the channel -> shows resistive behaviour: 58.7 uA at 520V at attenuation 1 (neighbour with 17.2 uA)
** switched to resistive with 66 uA at 520 V ! Lowered to 250 V with 32 uA (09/09/2024)

SM1-M35

- Ar+7%CO_2
- Flux ~22 l/h
- RH ~7%

HV range	Number of HV sectors	After Argon treatment
$HV = 570\ V$	20/40 (50%)	21/40 (52.5%)
$550\ V \leq HV < 570\ V$	5/40 (12.5%)	9/40 (22.5%)
$500\ V \leq HV < 550\ V$	14/40 (35%)	9/40 (22.5%)
$HV < 500\ V$	0/40 (0%)	0/40 (0%)
OFF	1/40 (2.5%)	1/40 (2.5%)

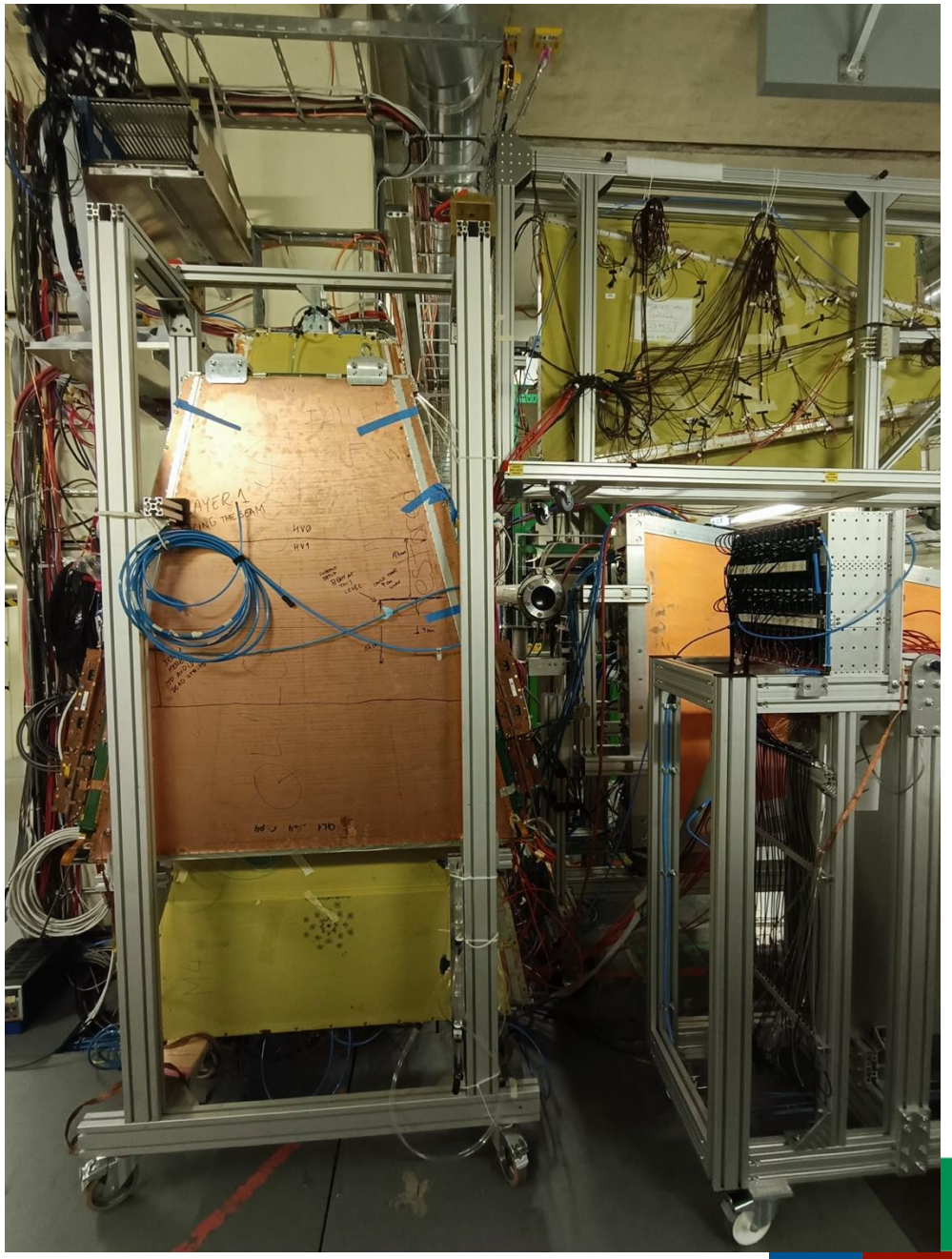


*Recurring trips

Sectors treated in Argon in April

News

- Installed SM1-M40 trolley back into the bunker, far from the source
- sTGC chamber mounted on the same trolley, on the back of the SM1 detector
- Installed new copper gas line for the delivery of the sTGC gas mixture CO2-n-pentane



News from P1

- Now multiple sectors with higher HV:
- A06 from 505 V to 510 V
- A08 from 505 V to 510 V
- C02 from 505 V to 510 V
- C10 from 505 V to 510 V
- C16 from 510 V to 515 V
- A12 SM1-HO from 510 V to 515 V
- A12 SM1-IP and SM2s from 505 V to 510 V

Larger cluster charge expected, as measured from C16 and A12 HV previous increase:

- +12% from 505 V to 510 V
- +25% from 505 V to 515 V

More sectors will follow probably.. Good promising start