ATLAS RPC Leak status and restart

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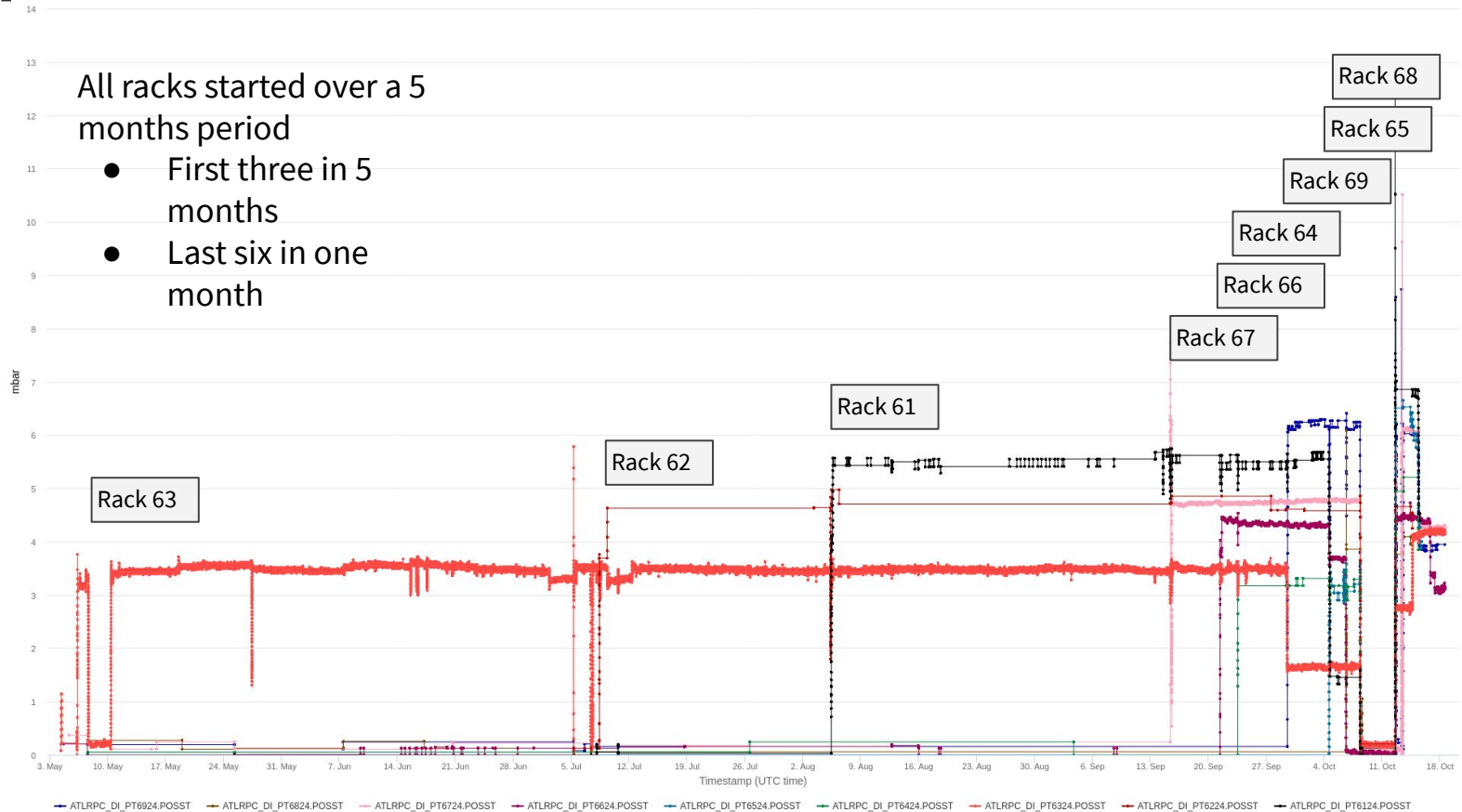
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Outline

- Tests in open mode
- Restart of the system

Tests in open mode

Input flow and rack starts

All racks started over a 5 months period
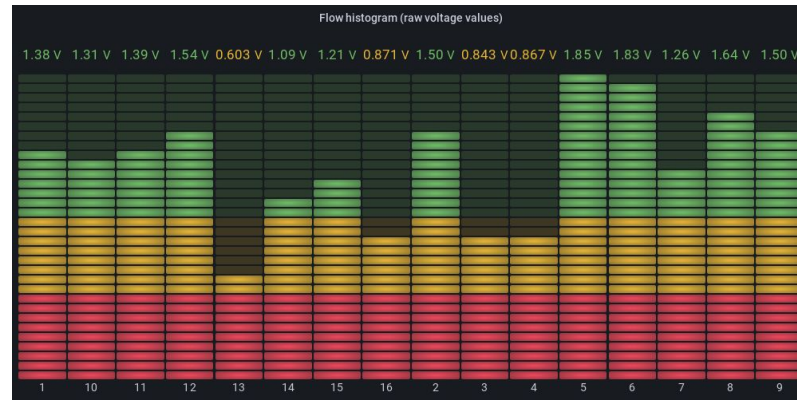- First three in 5 months
- Last six in one month

Rack tested by date

Rack	Reference period	Remarks
63	https://epdt-rd-monitoring.web.cern.ch/d/TYheJPqGk/manifold-flowmeters?orgId=1&from=1625496097385&to=1625622865299	No channels swapped, no interventions on flowcells
62	https://epdt-rd-monitoring.web.cern.ch/d/TYheJPqGk/manifold-flowmeters?orgId=1&from=1627980686449&to=1627998328886	
61	https://epdt-rd-monitoring.web.cern.ch/d/TYheJPqGk/manifold-flowmeters?orgId=1&from=1629362175374&to=1630391422636	
67	https://epdt-rd-monitoring.web.cern.ch/d/TYheJPqGk/manifold-flowmeters?orgId=1&from=1631796575961&to=1632153359674	Flowcells recalibrated → Factor ~ 3 between N2 and R-134a
66	https://epdt-rd-monitoring.web.cern.ch/d/TYheJPqGk/manifold-flowmeters?orgId=1&from=1632327434921&to=1632370604165	Flowcells recalibrated → Factor 3 between N2 and R-134a
64	https://epdt-rd-monitoring.web.cern.ch/d/TYheJPqGk/manifold-flowmeters?orgId=1&from=1632758643220&to=1632828473543	
69	https://epdt-rd-monitoring.web.cern.ch/d/TYheJPqGk/manifold-flowmeters?orgId=1&from=1633039300501&to=1633298052616	Maximum pressure ~ 0.18 mbar Flowcells recalibrated → low flow inaccuracy found
65	https://epdt-rd-monitoring.web.cern.ch/d/TYheJPqGk/manifold-flowmeters?orgId=1&from=1633514703282&to=1633529315539	
68	https://epdt-rd-monitoring.web.cern.ch/d/TYheJPqGk/manifold-flowmeters?orgId=1&from=1633547726982&to=1633606176010	Flowcells recalibrated → low flow inaccuracy found

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Rack 63

- First started
- No swap of channels
- No recalibration of flowcells
- Mapping 1:1 with omron
- 3 channels with ~ 0 return flow: 3, 4, 13

Flow histogram (raw voltage values)

| 1.38 V | 1.31 V | 1.39 V | 1.54 V | 0.603 V | 1.09 V | 1.21 V | 0.871 V | 1.50 V | 0.843 V | 0.867 V | 1.85 V | 1.83 V | 1.26 V | 1.64 V | 1.50 V |

Max channels:	32	**Total Flow:**	846.3	**Total Flow +newBI:**		1221.3	

63 L4 - Y.42-02-X4								
Position in Manifold	**Channel SCADA before LS2**	**Channel SCADA after LS2**	**Label**	**Comment**		**Flow l/h**	**FLOWCELL INPUT**	**FLOWCELL OUTPUT**
1-1	x	x	x	x	x	x	BLANK	BLANK
1-2	1	1	BOLA1.Ly0.DP2	Same position	Same channel No.	45.8	703304	703245
1-3	2	2	BOLA1.Ly1.DP1	Same position	Same channel No.	45.8	703306	703244
1-4	3	3	BOLC1.Ly0.DP2	Same position	Same channel No.	44.6	703302	703243
1-5	4	4	BOLC1.Ly1.DP1	Same position	Same channel No.	44.6	703303	703242
1-6	5	5	BML1.Ly0.DP2	Same position	Same channel No.	61.2	703300	703219
1-7	6	6	BML1.Ly1.DP1	Same position	Same channel No.	61.2	703301	703235
1-8	7	7	BML1.Ly0.DP2	Same position	Same channel No.	60.2	703297	703236
1-9	8	8	BML1.Ly1.DP1	Same position	Same channel No.	60.2	703299	703233
1-10	9	9	BML9.Ly0.DP2	Same position	Same channel No.	57.8	703293	703234
1-11	10	10	BML9.Ly1.DP1	Same position	Same channel No.	57.8	703296	703230
1-12	11	11	BML9.Ly0.DP2	Same position	Same channel No.	59.2	703292	703232
1-13	12	12	BML9.Ly1.DP1	Same position	Same channel No.	59.2	703289	703248
1-14	13	13	BOLA9.Ly0.DP2	Same position	Same channel No.	42.2	703288	703271
1-15	14	14	BOLA9.Ly1.DP1	Same position	Same channel No.	42.2	703287	703272
1-16	15	15	BOLC9.Ly0.DP2	Same position	Same channel No.	42.2	703231	703273
1-17	16	16	BOLC9.Ly1.DP1	Same position	Same channel No.	42.2	703247	703274
1-18	x	x	x	x	x	x	BLANK	BLANK

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Rack 62

- Some channels to Rack 67
- No new channels
- No recalibration of flowcells
- Mapping:
  - 1-8 on rack = 1-8 omron
  - 18-25 on rack = 9-16 omron
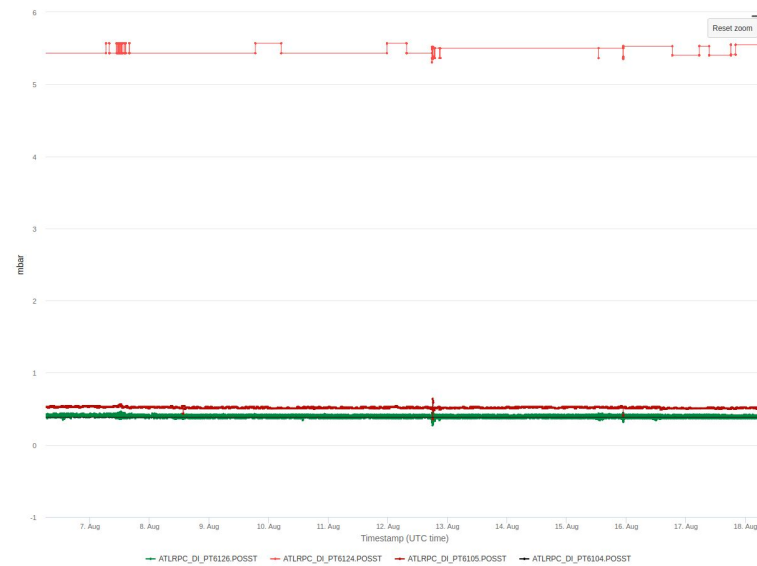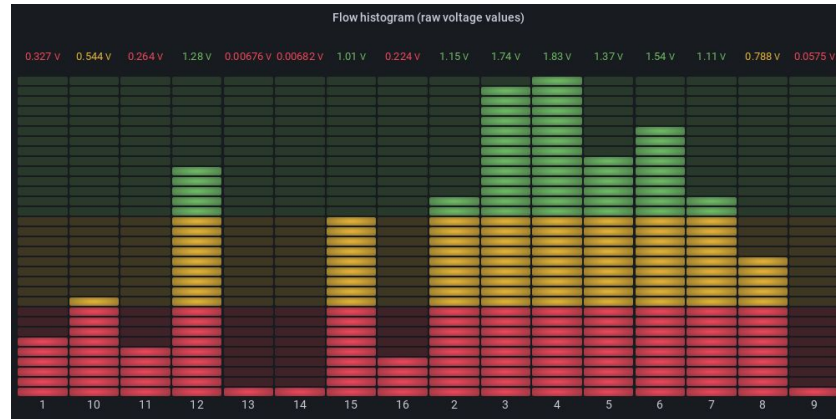- Negative flow on 3 channels: 5, 14, 16

Flow histogram (raw voltage values)

| 1.20 V | 1.46 V | 1.21 V | 0.996 V | 1.36 V | 0.00665 V | 1.43 V | 0.00663 V | 1.01 V | 1.49 V | 1.13 V | 0.00681 V | 0.663 V | 1.38 V | 1.49 V | 1.45 V |

Max channels:	26		Total Flow:	573.1		Total Flow +newBI:		723.1		
			62 L1 - Y.43-03-X1							
Position in Manifold	**Channel SCADA before LS2**	**Channel SCADA after LS2**	**Label**	**Comment**		**Flowl/h**	**FLOWCELL INPUT**	**FLOWCELL OUTPUT**		
1-1	1	1	BOSA16.Ly0.DP1	Same position	Same channel No.	27.9	703184	703186		
1-2	2	2	BOSA16.Ly1.DP2	Same position	Same channel No.	27.9	703104	703198		
1-3	3	3	BOSC16.Ly0.DP1	Same position	Same channel No.	27.8	703116	703204		
1-4	4	4	BOSC16.Ly1.DP2	Same position	Same channel No.	27.8	703182	703197		
1-5	5	5	BMS16.CO.Ly0.DP1	Same position	Same channel No.	42.8	703181	703226		
1-6	6	6	BMS16.CO.Ly1.DP2	Same position	Same channel No.	42.8	703180	703227		
1-7	7	7	BMS16.PI.Ly0.DP1	Same position	Same channel No.	41.2	703179	703228		
1-8	8	8	BMS16.PI.Ly1.DP2	Same position	Same channel No.	41.2	703178	703225		
1-9	9	9	newBI11.Ly0	to: 1-1 R67 Ch1	PHASE 2 - RUN 4	25.0	703177	703229		
1-10	10	10	newBI11.Ly1	to: 1-2 R67 Ch2	PHASE 2 - RUN 4	25.0	703099	703201		
1-11	11	11	newBI11.Ly2	to: 1-3 R67 Ch3	PHASE 2 - RUN 4	25.0	703101	703202		
1-12	12	12	Empty	to: 1-4 R67 Ch4	Same channel No.		703100	703203		
1-13	x	13	Empty	Empty	Not used before		703490	703491		
2-1	13	14	Empty	to: 1-5 R67 Ch5	Channel No. changed		703102	703117		
2-2	14	15	newBI15.Ly0	to: 1-6 R67 Ch6	PHASE 2 - RUN 4	25.0	703106	703121		
2-3	15	16	newBI15.Ly1	to: 1-7 R67 Ch7	PHASE 2 - RUN 4	25.0	703105	703120		
2-4	16	17	newBI15.Ly2	to: 1-8 R67 Ch8	PHASE 2 - RUN 4	25.0	703108	703124		
2-5	17	18	BMS10.CO.Ly0.DP1	Same position	Channel No. changed	42.0	703107	703123		
2-6	18	19	BMS10.CO.Ly1.DP2	Same position	Channel No. changed	42.0	703113	703135		
2-7	19	20	BMS10.PI.Ly0.DP1	Same position	Channel No. changed	39.5	703112	703138		
2-8	20	21	BMS10.PI.Ly1.DP2	Same position	Channel No. changed	39.5	703115	703136		
2-9	21	22	BOSA10.Ly0.DP1	Same position	Channel No. changed	27.6	703114	703140		
2-10	22	23	BOSA10.Ly1.DP2	Same position	Channel No. changed	27.6	703238	703139		
2-11	23	24	BOSC10.Ly0.DP1	Same position	Channel No. changed	27.6	703109	703193		
2-12	24	25	BOSC10.Ly1.DP2	Same position	Channel No. changed	27.6	703119	703188		
2-13	x	26	DUMMY	DUMMY	Not used before	20.0	703492	703493		

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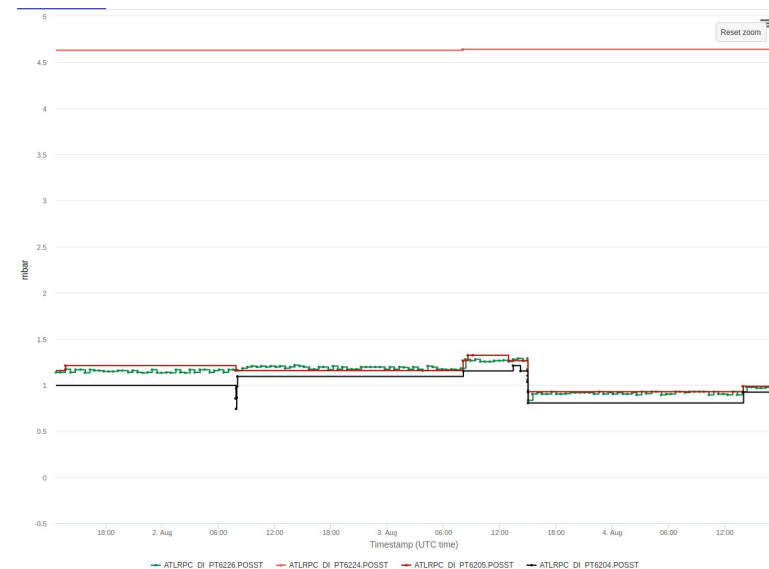
Rack 61

- Some channels to Rack 66
- No recalibration of flowcells
- Mapping:
  - 1-4 on rack = 1-4 omron
  - 9-12 on rack = 5-8 omron
  - 17-20 on rack = 9-12 omron
  - 25-28 on rack = 12-16 omron
- 5 Channels with negative flows: 1, 17, 19, 25, 26
- 1 channel with ~ 0 flow: 18

Rack 67

- Some channels to Rack 66
- Flowcell recalibrated for R-134a with higher precision on low flow (min R-134a flow of 3 ln/h ~ 10 ln/ of N2)
- Mapping:
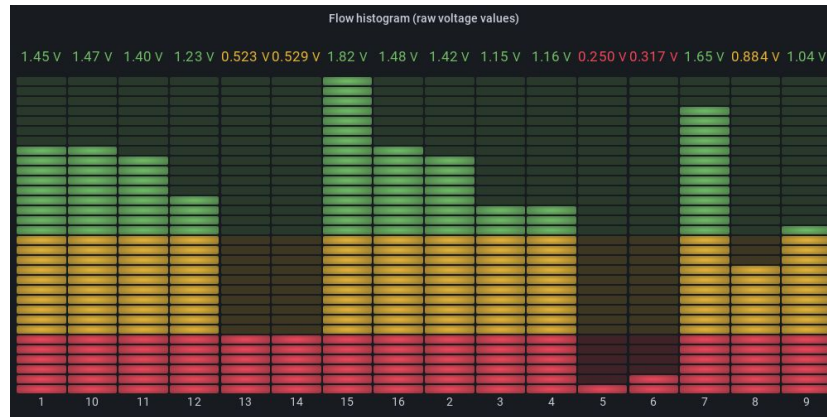 - 1-8 on rack = 1-8 omron
- Channel with negative flow: 2
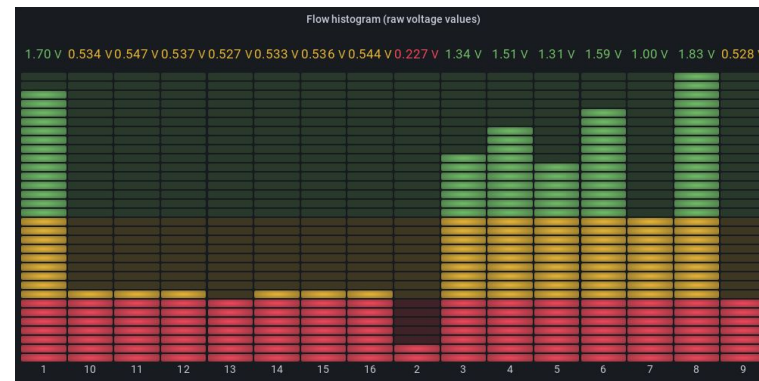
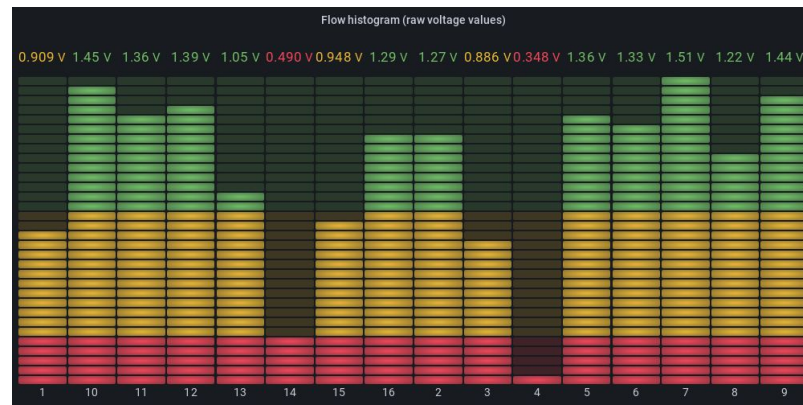|	Max channels:	26.0		Total Flow:	387.3	Total Flow +newBI:		612.3	
				67 L2 - Y.37-02-X2 (61.5)					
Position in Manifold	Channel SCADA before LS2	Channel SCADA after LS2	Label	Comment		Flowl/h	FLOWCELL INPUT	FLOWCELL OUTPUT	
1-1	x	1	BML15.CO.Ly0.DP2	From: 1-9 R62 Ch9	Moved	46.6	703354	703355	
1-2	x	2	BML15.CO.Ly1.DP1	From: 1-10 R62 Ch10	Moved	46.6	703356	703357	
1-3	x	3	BML15.PI.Ly0.DP2	From: 1-11 R62 Ch11	Moved	46.5	703358	703359	
1-4	x	4	BML15.PI.Ly1.DP1	From: 1-12 R62 Ch12	Moved	46.5	703360	703361	
1-5	x	5	BML11.CO.Ly0.DP2	From: 2-1 R62 Ch13	Moved	44.0	703362	703363	
1-6	x	6	BML11.CO.Ly1.DP1	From: 2-2 R62 Ch14	Moved	44.0	703364	703365	
1-7	x	7	BML11.PI.Ly0.DP2	From: 2-3 R62 Ch15	Moved	46.7	703366	703367	
1-8	x	8	BML11.PI.Ly1.DP1	From: 2-4 R62 Ch16	Moved	46.7	703368	703369	
1-9	x	9	newBI.12.Ly0		PHASE 2 - RUN 4	25.0	703370	703371	
1-10	x	10	newBI.12.Ly1		PHASE 2 - RUN 4	25.0	703372	703373	
1-11	x	11	newBI.12.Ly2		PHASE 2 - RUN 4	25.0	703374	703375	
1-12	x	12	newBI.13.Ly0		PHASE 2 - RUN 4	25.0	703376	703377	
1-13	x	13	newBI.13.Ly1		PHASE 2 - RUN 4	25.0	703378	703379	
2-1	x	14	newBI.13.Ly2		PHASE 2 - RUN 4	25.0	703380	703381	
2-2	x	15	newBI.14.Ly0		PHASE 2 - RUN 4	25.0	703382	703383	
2-3	x	16	newBI.14.Ly1		PHASE 2 - RUN 4	25.0	703384	703385	
2-4	x	17	newBI.14.Ly2		PHASE 2 - RUN 4	25.0	703386	703387	
2-5	x	18	Empty	Empty	Empty	x	BLANK	BLANK	
2-6	x	19	Empty	Empty	Empty	x	BLANK	BLANK	
2-7	x	20	Empty	Empty	Empty	x	BLANK	BLANK	
2-8	x	21	Empty	Empty	Empty	x	BLANK	BLANK	
2-9	x	22	Empty	Empty	Empty	x	BLANK	BLANK	
2-10	x	23	Empty	Empty	Empty	x	BLANK	BLANK	
2-11	x	24	Empty	Empty	Empty	x	BLANK	BLANK	
2-12	x	25	Empty	Empty	Empty	x	BLANK	BLANK	
2-13	x	26	DUMMY	DUMMY	DUMMY	20.0	703388	703389	

Rack 66

- Flowcells recalibrated for R-134a with higher precision on low flow (min R-134a flow of 3 ln/h ~ 10 ln/ of N2)
- Mapping:
  - 1-12 on rack = 1-12 on omron
  - dummy chamber in and out = 15,16 omron
- Channel with negative flow: 5, 6

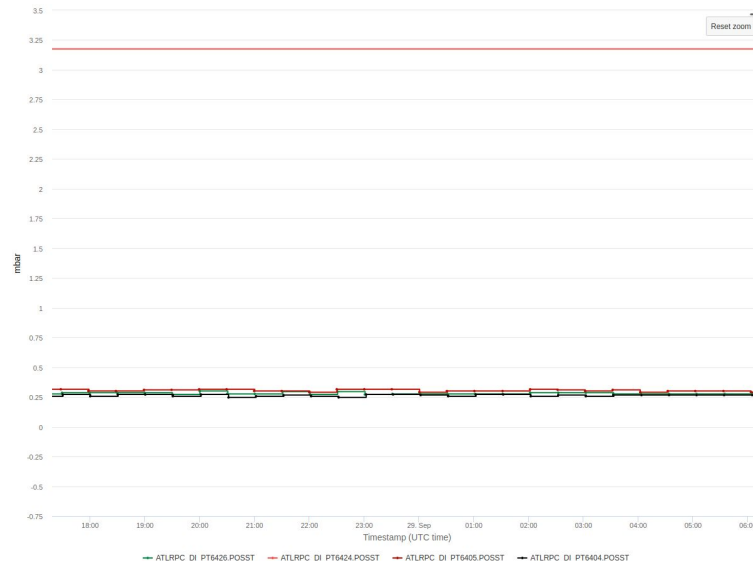| Max channels:	16		Total Flow:	446.8		Total Flow +newBI:		446.8	
66 L0 - Y.56-05-X0 (60.5)									
Position in Manifold	Channel SCADA before LS2	Channel SCADA after LS2	Label	Comment		Flowl/h	FLOWCELL INPUT	FLOWCELL OUTPUT	
1-1	x	x	x	x	x	x	BLANK	BLANK	
1-2	x	1	BOSA12.Ly0.DP1	From: 1-6 R61 Ch5	Moved	35.6	703328	703329	
1-3	x	2	BOSA12.Ly1.DP2	From: 1-7 R61 Ch6	Moved	35.6	703330	703331	
1-4	x	3	BOSC12.Ly0.DP1	From: 1-8 R61 Ch7	Moved	32.1	703332	703333	
1-5	x	4	BOSC12.Ly1.DP2	From: 1-9 R61 Ch8	Moved	32.1	703334	703335	
1-6	x	5	BOLA13.Ly0.DP2	From: 1-14 R61 Ch13	Moved	36.6	703336	703337	
1-7	x	6	BOLA13.Ly1.DP1	From: 1-15 R61 Ch14	Moved	36.6	703338	703339	
1-8	x	7	BOLC13.Ly0.DP2	From: 1-16 R61 Ch15	Moved	38.5	703340	703341	
1-9	x	8	BOLC13.Ly1.DP1	From: 1-17 R61 Ch16	Moved	38.5	703342	703343	
1-10	x	9	BOSA14.Ly0.DP1	From: 2-6 R61 Ch21	Moved	35.8	703344	703345	
1-11	x	10	BOSA14.Ly1.DP2	From: 2-7 R61 Ch22	Moved	35.8	703346	703347	
1-12	x	11	BOSC14.Ly0.DP1	From: 2-8 R61 Ch23	Moved	34.7	703348	703349	
1-13	x	12	BOSC14.Ly1.DP2	From: 2-9 R61 Ch24	Moved	34.7	703350	703351	
1-14	x	13	Empty	Empty	Empty	x	BLANK	BLANK	
1-15	x	14	Empty	Empty	Empty	x	BLANK	BLANK	
1-16	x	15	Empty	Empty	Empty	x	BLANK	BLANK	
1-17	x	16	DUMMY	DUMMY	DUMMY	20.0	703352	703353	
1-1B	x	x	x	x	x	x	BLANK	BLANK	

Rack 64

- No flowcells recalibration
- Mapping:
  - 1-8 on rack = 1-8 on omron
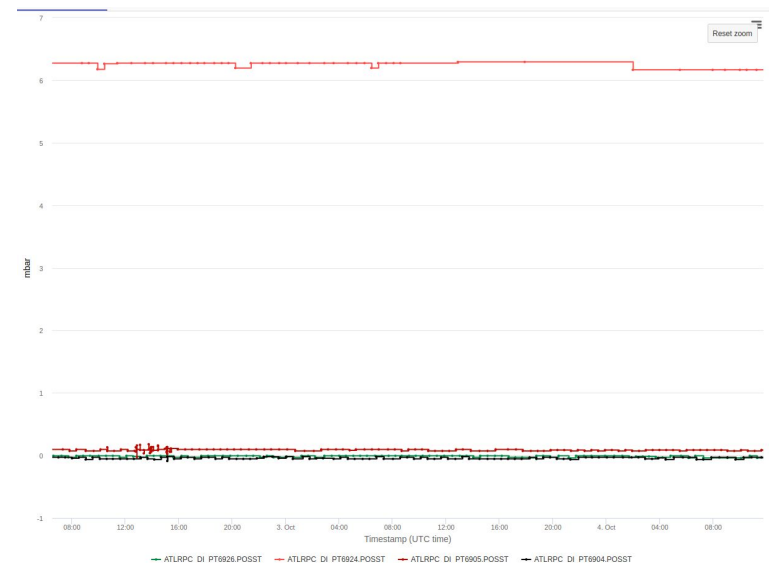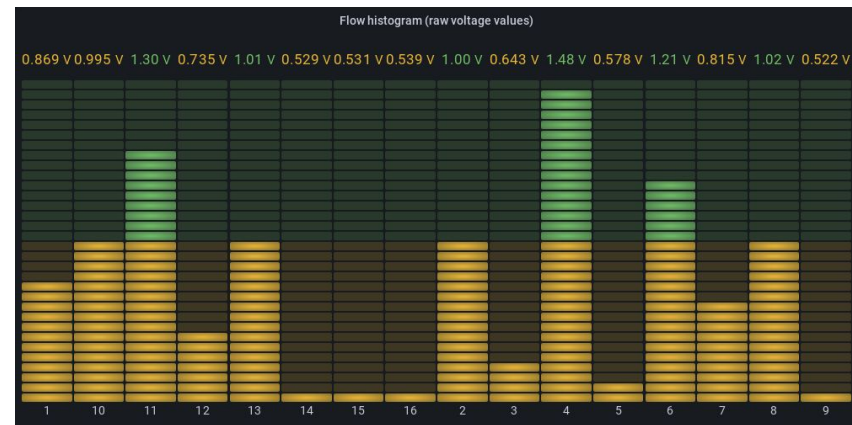 - 18-25 on rack = 9-16 on omron
- Channel with negative flow: 4, 23

	Max channels:	26		Total Flow:	585.1	Total Flow +newBI:		810.1	
64 L7 - Y.42-02-X7									
Position in Manifold	Channel SCADA before LS2	Channel SCADA after LS2	Label	Comment		Flowl/h	FLOWCELL INPUT	FLOWCELL OUTPUT	
1-1	1	1	BOSA2.Ly0.DP1	Same position	Same channel No.	29.4	703082	703069	
1-2	2	2	BOSA2.Ly1.DP2	Same position	Same channel No.	29.4	703089	703070	
1-3	3	3	BOSC2.Ly0.DP1	Same position	Same channel No.	29.4	703088	703081	
1-4	4	4	BOSC2.Ly1.DP2	Same position	Same channel No.	29.4	703091	703080	
1-5	5	5	BMS2.CO.Ly0.DP1	Same position	Same channel No.	40.8	703090	703079	
1-6	6	6	BMS2.CO.Ly1.DP2	Same position	Same channel No.	40.8	703095	703077	
1-7	7	7	BMS2.PI.Ly0.DP1	Same position	Same channel No.	42.7	703094	703071	
1-8	8	8	BMS2.PI.Ly1.DP2	Same position	Same channel No.	42.7	703093	703072	
1-9	9	9	newBI.2.Ly0	to: 1-1 R68 Ch1	PHASE 2 - RUN 4	25.0	703092	703073	
1-10	10	10	newBI.2.Ly1	to: 1-2 R68 Ch2	PHASE 2 - RUN 4	25.0	703098	703078	
1-11	11	11	newBI.2.Ly2	to: 1-3 R68 Ch3	PHASE 2 - RUN 4	25.0	703097	703074	
1-12	12	12	newBI.3.Ly0	to: 1-4 R68 Ch4	PHASE 2 - RUN 4	25.0	703096	703075	
1-13	x	13	newBI.3.Ly1	Not used before	PHASE 2 - RUN 4	25.0	703486	703487	
2-1	13	14	newBI.3.Ly2	to: 1-5 R68 Ch5	PHASE 2 - RUN 4	25.0	703052	703051	
2-2	14	15	newBI.7.Ly0	to: 1-6 R68 Ch6	PHASE 2 - RUN 4	25.0	703057	703048	
2-3	15	16	newBI.7.Ly1	to: 1-7 R68 Ch7	PHASE 2 - RUN 4	25.0	703058	703053	
2-4	16	17	newBI.7.Ly2	to: 1-8 R68 Ch8	PHASE 2 - RUN 4	25.0	703059	703085	
2-5	17	18	BMS8.CO.Ly0.DP1	Same position	Channel No. changed	42.5	703060	703083	
2-6	18	19	BMS8.CO.Ly1.DP2	Same position	Channel No. changed	42.5	703061	703016	
2-7	19	20	BMS8.PI.Ly0.DP1	Same position	Channel No. changed	41.8	703062	703055	
2-8	20	21	BMS8.PI.Ly1.DP2	Same position	Channel No. changed	41.8	703063	703056	
2-9	21	22	BOSA8.Ly0.DP1	Same position	Channel No. changed	28.6	703065	703050	
2-10	22	23	BOSA8.Ly1.DP2	Same position	Channel No. changed	28.6	703066	703049	
2-11	23	24	BOSC8.Ly0.DP1	Same position	Channel No. changed	27.3	703067	703086	
2-12	24	25	BOSC8.Ly1.DP2	Same position	Channel No. changed	27.3	703068	703064	
2-13	x	26	DUMMY	DUMMY	Not used before	20.0	703488	703489	

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Rack 69

- Flowcells recalibrated
  - Low precision on low flows for N2
- Mapping:
  - 1-13 on rack = 1-13 on omron
  - 18-25 on rack = 9-16 on omron
- Max reachable pressure on chamber ~ 0.15 mbar
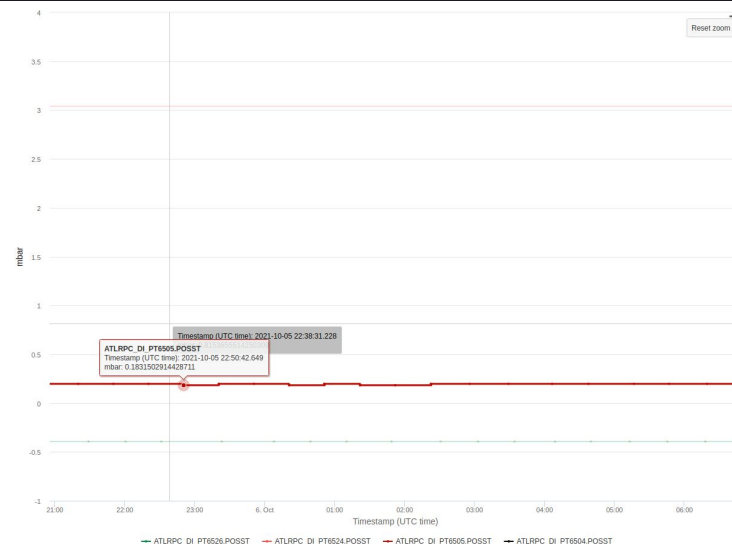- Channel with ~ 0 flow: 1, 3, 5, 9 (8), 12

Flow histogram (raw voltage values)

0.869 V 0.995 V 1.30 V 0.735 V 1.01 V 0.529 V 0.531 V 0.539 V 1.00 V 0.643 V 1.48 V 0.578 V 1.21 V 0.815 V 1.02 V 0.522 V

Max channels:	16		Total Flow:	413.6		Total Flow +newBI:		413.6
69 L8 - Y.52-05-X8 (65.5)								
Position in Manifold	Channel SCADA before LS2	Channel SCADA after LS2	Label	Comment		Flow l/h	FLOWCELL INPUT	FLOWCELL OUTPUT
1-1	x	x	x	x	x	x	BLANK	BLANK
1-2	x	1	BOSA4.Ly0.DP1	From: R65 Ch5	Moved	28.5	703426	703427
1-3	x	2	BOSA4.Ly1.DP2	From: R65 Ch6	Moved	28.5	703428	703429
1-4	x	3	BOSC4.Ly0.DP1	From: R65 Ch7	Moved	29.4	703430	703431
1-5	x	4	BOSC4.Ly1.DP2	From: R65 Ch8	Moved	29.4	703432	703433
1-6	x	5	BOLA5.Ly0.DP2	From: R65 Ch13	Moved	42.9	703434	703435
1-7	x	6	BOLA5.Ly1.DP1	From: R65 Ch14	Moved	42.9	703436	703437
1-8	x	7	BOLC5.Ly0.DP2	From: R65 Ch15	Moved	40.8	703438	703439
1-9	x	8	BOLC5.Ly1.DP1	From: R65 Ch16	Moved	40.8	703440	703441
1-10	x	9	BOSA6.Ly0.DP1	From: R65 Ch25	Moved	27.7	703442	703443
1-11	x	10	BOSA6.Ly1.DP2	From: R65 Ch26	Moved	27.7	703444	703445
1-12	x	11	BOSC6.Ly0.DP1	From: R65 Ch27	Moved	27.4	703446	703447
1-13	x	12	BOSC6.Ly1.DP2	From: R65 Ch28	Moved	27.4	703448	703449
1-14	x	13	Empty	Empty	Empty	x	BLANK	BLANK
1-15	x	14	Empty	Empty	Empty	x	BLANK	BLANK
1-16	x	15	Empty	Empty	Empty	x	BLANK	BLANK
1-17	x	16	DUMMY	DUMMY	DUMMY	20	703450	703451
1-18	x	x	x	x	x	x	BLANK	BLANK

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Rack 65

- No flowcells recalibration
  - Low precision on low flows for N2
- Mapping:
  - 1-4 on rack = 1-4 on omron
  - 9-12 on rack = 5-8 on omron
  - 17-24 on rack = 9-16 on omron
  - missing channels 29, 30, 31
- Channel with negative flow: 2
- Channel with ~ 0 flow: 3, 4

Flow histogram (raw voltage values)

1.00 V 1.55 V 1.38 V 1.38 V 1.24 V 1.66 V 1.65 V 1.61 V 0.288 V 0.686 V 0.735 V 1.71 V 1.43 V 1.08 V 1.27 V 1.74 V

Max channels:		32	Total Flow:		940.3	Total Flow +newBl:		940.3
65 L8 - Y.42-05-X8								
Position in Manifold	Channel SCADA before LS2	Channel SCADA after LS2	Label	Comment		Flowl/h	FLOWCELL INPUT	FLOWCELL OUTPUT
1-1	x	x	x	x	x		BLANK	BLANK
1-2	1	1	BOLA3.Ly0.DP2	Same position	Same channel No.	47.0	703017	703199
1-3	2	2	BOLA3.Ly1.DP1	Same position	Same channel No.	47.0	703018	703013
1-4	3	3	BOLC3.Ly0.DP2	Same position	Same channel No.	42.9	703019	703011
1-5	4	4	BOLC3.Ly1.DP1	Same position	Same channel No.	42.9	703020	703185
1-6	5	5	Empty	to: 1-1 R69 Ch1	Same channel No.		703021	703009
1-7	6	6	Empty	to: 1-2 R69 Ch2	Same channel No.		703012	703008
1-8	7	7	Empty	to: 1-3 R69 Ch3	Same channel No.		703022	703007
1-9	8	8	Empty	to: 1-4 R69 Ch4	Same channel No.		703023	703006
1-10	9	9	BMS4.Ly0.DP1	Same position	Same channel No.	41.7	703024	703005
1-11	10	10	BMS4.Ly1.DP2	Same position	Same channel No.	41.7	703025	703004
1-12	11	11	BMS4.Ly0.DP1	Same position	Same channel No.	44.1	703026	703003
1-13	12	12	BMS4.Ly1.DP2	Same position	Same channel No.	44.1	703027	703002
1-14	13	13	Empty	to: 1-5 R69 Ch5	Same channel No.		703029	703001
1-15	14	14	Empty	to: 1-6 R69 Ch6	Same channel No.		703030	703014
1-16	15	15	Empty	to: 1-7 R69 Ch7	Same channel No.		703031	703015
1-17	16	16	BOLC7.Ly1.DP1	to: 1-8 R69 Ch8	From: 2-32 R69 Ch32	41.7	703032	703084
1-18	x	x	x	x	x		BLANK	BLANK
2-1	x	x	x	x	x		BLANK	BLANK
2-2	17	17	BML5.Ly0.DP2	Same position	Same channel No.	57.5	703033	703205
2-3	18	18	BML5.Ly1.DP1	Same position	Same channel No.	57.5	703034	703206
2-4	19	19	BML5.Ly0.DP2	Same position	Same channel No.	59.4	703035	703210
2-5	20	20	BML5.Ly1.DP1	Same position	Same channel No.	59.4	703036	703212
2-6	21	21	BMS6.Ly0.DP1	Same position	Same channel No.	43.2	703037	703196
2-7	22	22	BMS6.Ly1.DP1	Same position	Same channel No.	43.2	703038	703213
2-8	23	23	BMS6.Ly0.DP1	Same position	Same channel No.	41.6	703039	703214
2-9	24	24	BMS6.Ly1.DP2	Same position	Same channel No.	41.6	703041	703215
2-10	25	25	Empty	to: 1-9 R69 Ch9	Same channel No.		703040	703216
2-11	26	26	Empty	to: 1-10 R69 Ch10	Same channel No.		703042	703217
2-12	27	27	Empty	to: 1-11 R69 Ch11	Same channel No.		703043	703218
2-13	28	28	Empty	to: 1-12 R69 Ch12	Same channel No.		703044	703190
2-14	29	29	BOLA7.Ly0.DP2	Same position	Same channel No.	41.1	703045	703191
2-15	30	30	BOLA7.Ly1.DP1	Same position	Same channel No.	41.1	703046	703194
2-16	31	31	BOLC7.Ly0.DP2	Same position	Same channel No.	41.7	70347	703195
2-17	32	32	DUMMY	to: 1-17 R65 Ch16	DUMMY	20.0	703087	703200
2-18	x	x	x	x	x		BLANK	BLANK

ATLRPC_DI_PT6505.POSST
Timestamp (UTC time): 2021-10-05 22:38:31.228

ATLRPC_DI_PT6524.POSST
Timestamp (UTC time): 2021-10-05 22:50:42.649
mbar: 0.1831502914428711

— ATLRPC_DI_PT6526.POSST   — ATLRPC_DI_PT6524.POSST   — ATLRPC_DI_PT6505.POSST   — ATLRPC_DI_PT6504.POSST

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Rack 68

- Flowcells recalibrated
  - Low precision on low flows for N2
- Mapping:
  - 1-8 on rack = 1-8 on omron
- Channel with ~ 0 flow: 3, 5, 7,

	Max channels:	26		Total Flow:	485.6		Total Flow +newBI:		710.6	
				68 L7 - Y.50-02-X7 (64.5)						
Position in Manifold	**Channel SCADA before LS2**	**Channel SCADA after LS2**	**Label**	**Comment**		**Flowl/h**	**FLOWCELL INPUT**	**FLOWCELL OUTPUT**		
1-1	x	1	BML3.CO.Ly0.DP2	From: 1-9 R64 Ch9	Moved	59.4	703390	703391		
1-2	x	2	BML3.CO.Ly1.DP1	From: 1-10 R64 Ch10	Moved	59.4	703392	703393		
1-3	x	3	BML3.PI.Ly0.DP2	From: 1-11 R64 Ch11	Moved	61.5	703394	703395		
1-4	x	4	BML3.PI.Ly1.DP1	From: 1-12 R64 Ch12	Moved	61.5	703396	703397		
1-5	x	5	BML7.CO.Ly0.DP2	From: 2-1 R64 Ch13	Moved	55.3	703398	703399		
1-6	x	6	BML7.CO.Ly1.DP1	From: 2-2 R64 Ch14	Moved	55.3	703400	703401		
1-7	x	7	BML7.PI.Ly0.DP2	From: 2-3 R64 Ch15	Moved	56.6	703402	703403		
1-8	x	8	BML7.PI.Ly1.DP1	From: 2-4 R64 Ch16	Moved	56.6	703404	703305		
1-9	x	9	newBI.04.Ly0		PHASE 2 - RUN 4	25.0	703406	703407		
1-10	x	10	newBI.04.Ly1		PHASE 2 - RUN 4	25.0	703408	703409		
1-11	x	11	newBI.04.Ly2		PHASE 2 - RUN 4	25.0	703410	703411		
1-12	x	12	newBI.05.Ly0		PHASE 2 - RUN 4	25.0	703412	703413		
1-13	x	13	newBI.05.Ly1		PHASE 2 - RUN 4	25.0	703414	703415		
2-1	x	14	newBI.05.Ly2		PHASE 2 - RUN 4	25.0	703416	703417		
2-2	x	15	newBI.06.Ly0		PHASE 2 - RUN 4	25.0	703418	703419		
2-3	x	16	newBI.06.Ly1		PHASE 2 - RUN 4	25.0	703420	703421		
2-4	x	17	newBI.06.Ly2		PHASE 2 - RUN 4	25.0	703422	703423		
2-5	x	18	Empty	Empty	Empty	x	BLANK	BLANK		
2-6	x	19	Empty	Empty	Empty	x	BLANK	BLANK		
2-7	x	20	Empty	Empty	Empty	x	BLANK	BLANK		
2-8	x	21	Empty	Empty	Empty	x	BLANK	BLANK		
2-9	x	22	Empty	Empty	Empty	x	BLANK	BLANK		
2-10	x	23	Empty	Empty	Empty	x	BLANK	BLANK		
2-11	x	24	Empty	Empty	Empty	x	BLANK	BLANK		
2-12	x	25	Empty	Empty	Empty	x	BLANK	BLANK		
2-13	x	26	DUMMY	DUMMY	DUMMY	20.0	703424	703425		

Summary

Rack	Channels leaking
63	3, 14, 13
62	5, 4, 16
61	1, 17, 18, 19, 25, 26
67	2
66	5, 6
64	4, 23
69	1, 3, 5, 8, 9, 12
65	2,3,4
68	3,5,7

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Restart of the system

Restart in recirculation mode: N2

Racks restarted with N2 on Tue 12/10

- Input pressure reducers and regulation valve to minimum → minimum flow possible
- Racks 61-65 started first
- Racks 66-69 started manually
    - Regulation valve in rack 67 opening < 20% → stopped
    - Regulation valve in rack 69 opening < 20 % → stopped
- Around 4 hours to fill all the system
- Leak rate ~ 1250-1300 ln/h
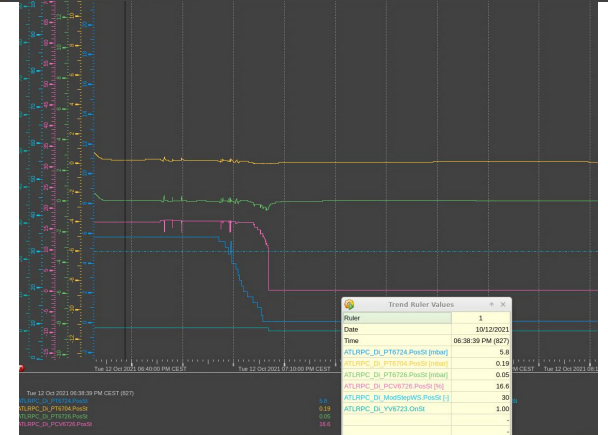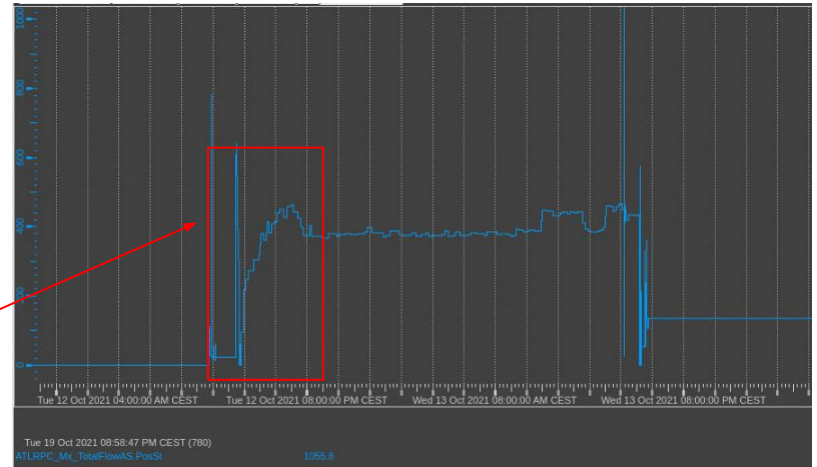
Restart in recirculation mode: N2 + 100 ln/h std. mix.

On Some Freon injected to spot leaks and monitor

No big change in regulation valves
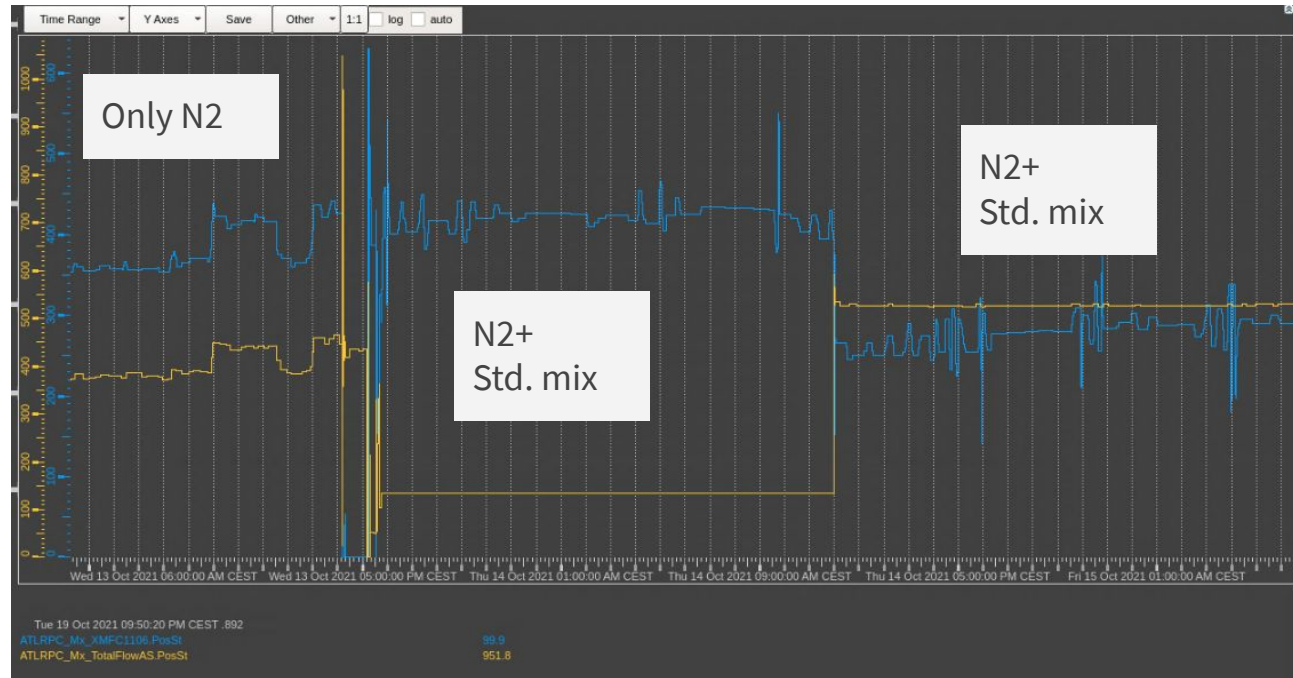
# Restart in recirculation mode: N2 + 500 ln/h std. mix.

Regulation valves started reacting to presence of Freon → opening

65, 68, 69 remained stable or decreased their opening

100 ln/ std mix

500 ln/ std mix

800 ln/ std mix

Regulation valve rack 69
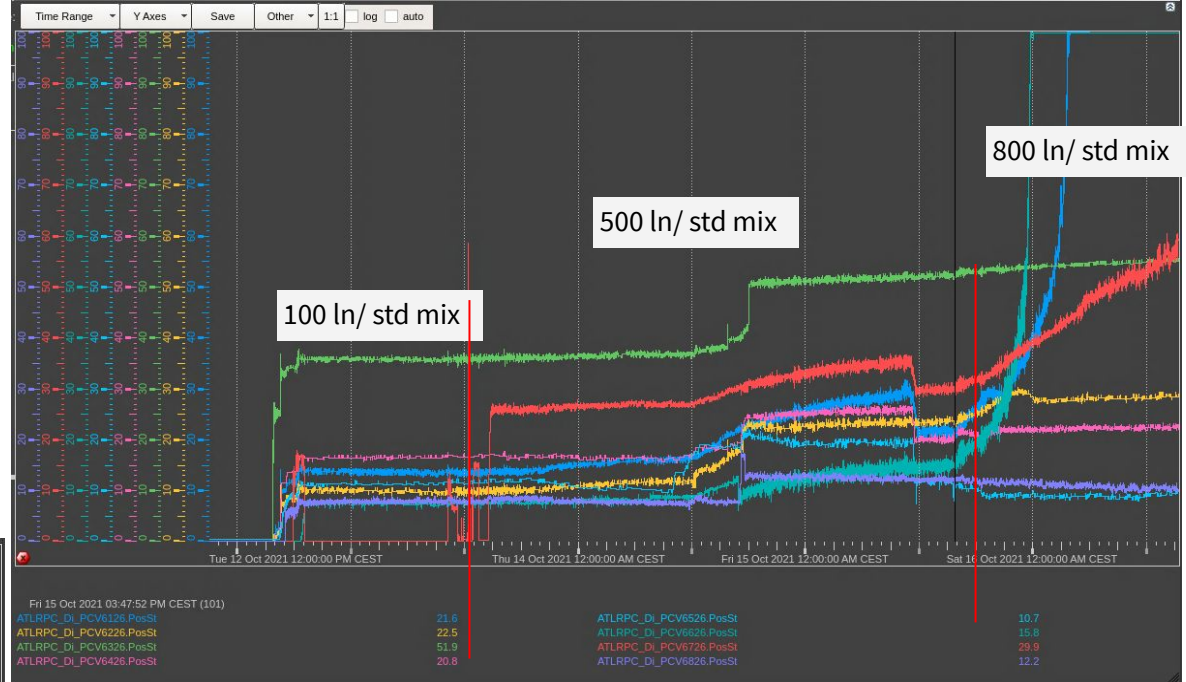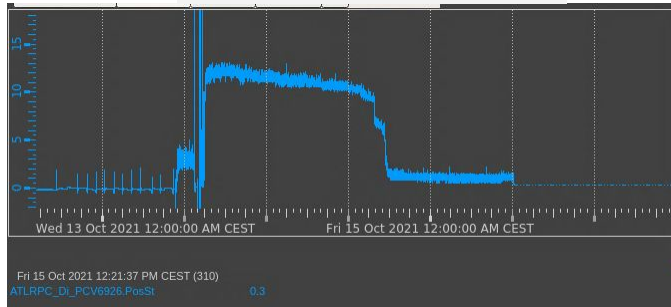
Switch regulation from output to chamber pressre

- On 14/10 around 15:30-16 regulation was switched from output sensor to chamber sensor
- The setpoint of the chamber was kept to be one it had with regulation on output (in the limit of 0.05 mbar)
- Rack 69 chamber pressure around -0.05. Setpoint changed to 0 mbar → regulation valve closed from 12% to 7%
  - Negative flow increased
  - Valve kept closing as freon kept coming
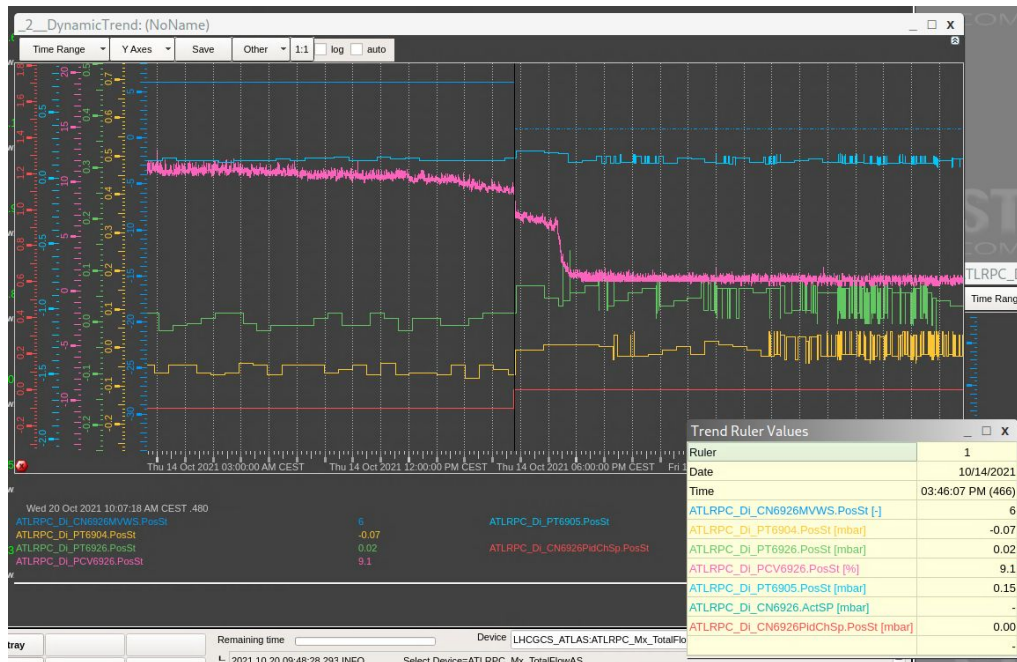
Switch regulation from output to chamber pressre

Dummy chambers flow regulated

- Dummy chamber flow slightly decreased on rack 69
  - This accidentaly decreased the flow of a non-leaking channel
  - Negative flow increased on the channel
  - Regulation valve closed to keep pressure stable
  - Regulation valve went to 0% → not possible to operate the rack without high flow on dummy chamber
- Rack 69 was decided to run in open mode
  - Exhuast to Air
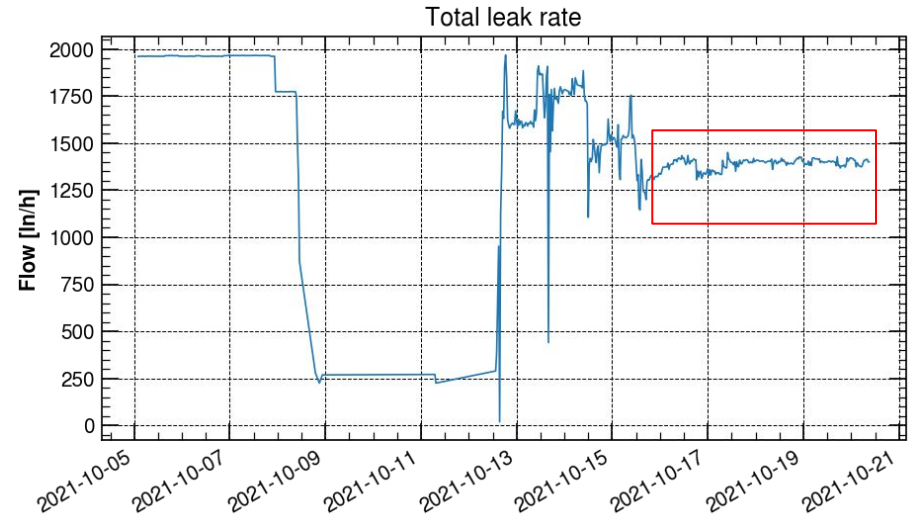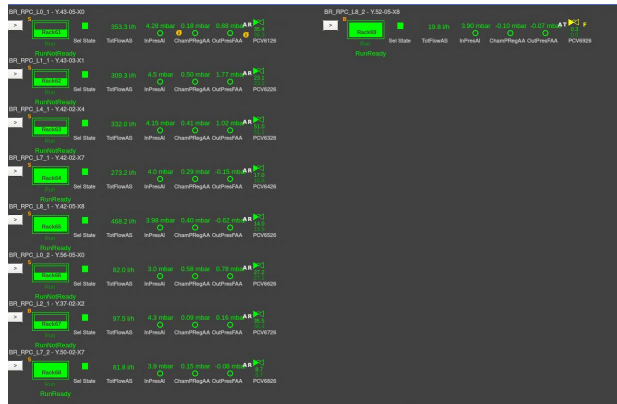 - Input Zimmerli reduced to minimum possible pressure

Current status

- Input flows of most racks reduced to reduce leak rate
- Channel 4, 23 of rack 64 disconnected
- Current leak rate around 1300-1400 ln/h
- Problem in regulation of Rack 61-66:

Rack 66 regulation valve going to 100%

Rack

Total leak rate

Current status

- Input flows of most racks reduced to reduce leak rate
- Channel 4, 23 of rack 64 disconnected
- Current leak rate around 1300-1400 ln/h
- Problem in regulation of Rack 61-66:

Rack 66 regulation valve going to 100%

Rack 61 regulation valve as well

Rack 68 regulation valve around 8 %

Rack 68 output pressure ~ -0.1 mbar

Rack 65 output pressure at -0.6 mbar

Rack 64 output pressure at -0.2 mbar