New Leak Testing Code

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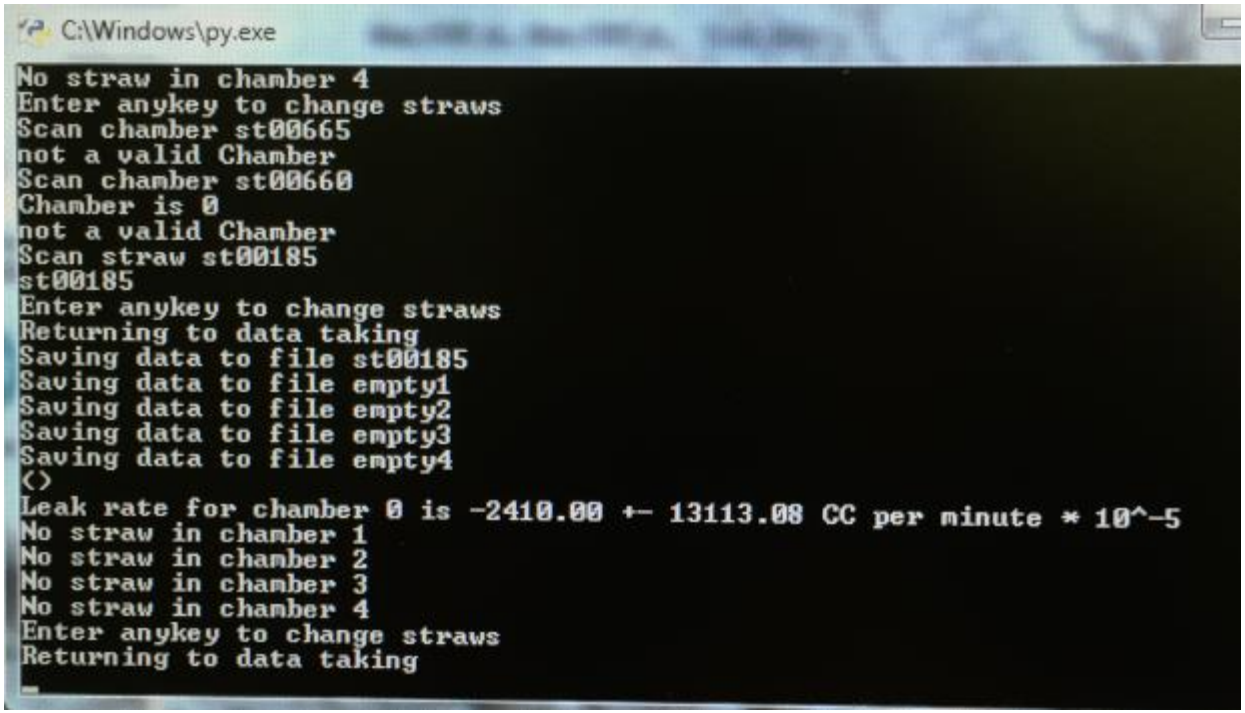
Leak test code goals:

1. Single program to run Arduino, fitting, saving files
2. Real time knowledge of when leak test past/fail
3. Systematically organize information in a way practical to production (including barcode scanners)

Running Python code



- Arduino check when each chamber updates
- Upon a new data point, raw data is saved to a file corresponding to the straw/chamber.
- Every 60 seconds raw data is fit using a simple linear regression
- If any keyboard command or barcode scanner happens,
  Code will stop and let you specify chamber and straw which is in it
- Files are updated with the placement of a new straw

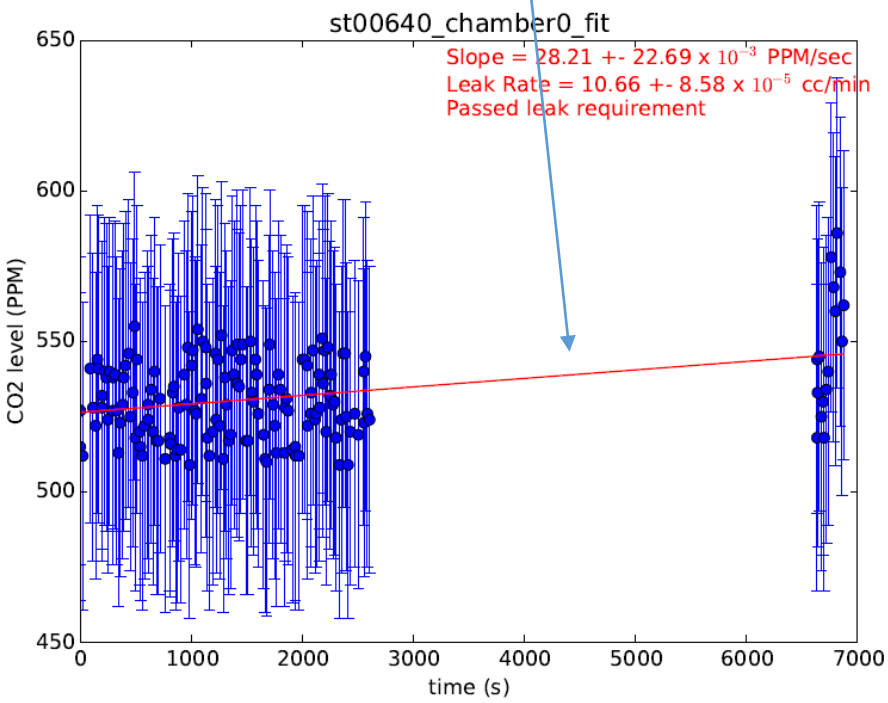
Using Barcode Scanners

- Each Chamber needs to be assigned a barcode so the code know what chamber we want to change.
- Scan chamber then scan straw in chamber, code will create raw_data file and fit file for that straw.
- Scanner is treated as a keyboard for the computer, if they were in previous NOVA mode they need to be reset to factory settings.

Saved files

Wasn't running code, this is just
A background check

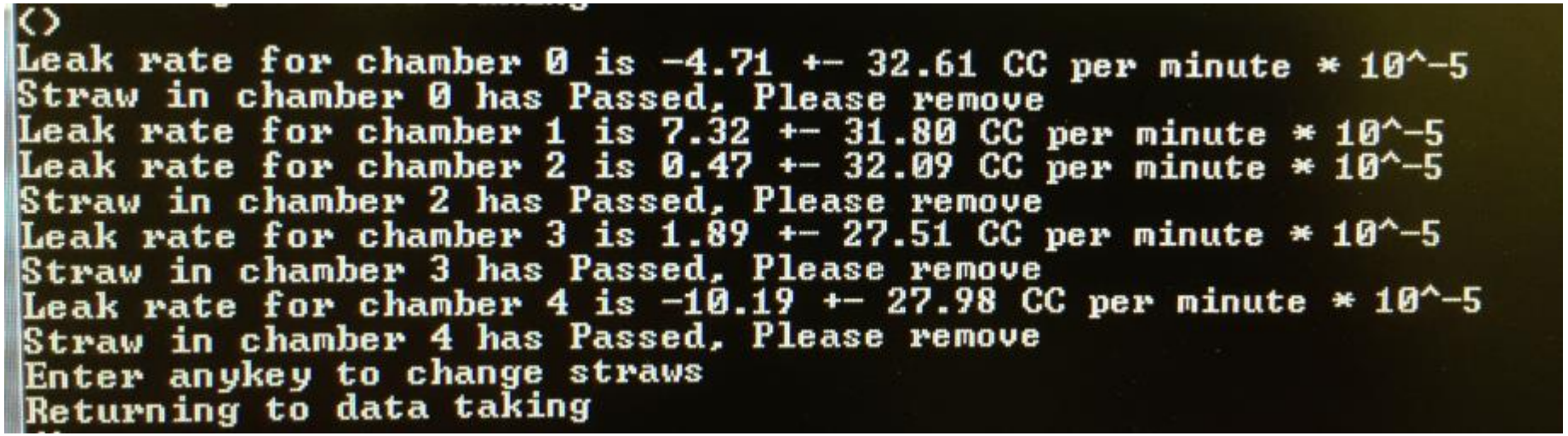
Epoc Time	chamber	PPM level	Human date/time
1437072085.31	0.00	527.00	2015-07-16 13:41:25
1437072085.31	0.00	527.00	2015-07-16 13:41:25
1437072085.31	0.00	515.00	2015-07-16 13:41:25
1437072108.3	0.00	512.00	2015-07-16 13:41:48
1437072176.58	0.00	541.00	2015-07-16 13:42:56
1437072201.31	0.00	528.00	2015-07-16 13:43:21
1437072224.54	0.00	522.00	2015-07-16 13:43:44
1437072240.22	0.00	544.00	2015-07-16 13:44:00
1437072249.5	0.00	541.00	2015-07-16 13:44:09
1437072280.5	0.00	528.00	2015-07-16 13:44:40
1437072282.41	0.00	532.00	2015-07-16 13:44:42
1437072304.82	0.00	540.00	2015-07-16 13:45:04
1437072321.32	0.00	538.00	2015-07-16 13:45:21
1437072334.77	0.00	524.00	2015-07-16 13:45:34
1437072350.12	0.00	540.00	2015-07-16 13:45:50
1437072377.33	0.00	527.00	2015-07-16 13:46:17
1437072381.16	0.00	538.00	2015-07-16 13:46:21
1437072398.45	0.00	539.00	2015-07-16 13:46:38
1437072413.8	0.00	527.00	2015-07-16 13:46:53
1437072430.46	0.00	513.00	2015-07-16 13:47:10
1437072446.43	0.00	523.00	2015-07-16 13:47:26
1437072468.99	0.00	529.00	2015-07-16 13:47:48
1437072478.59	0.00	538.00	2015-07-16 13:47:58
1437072493.95	0.00	542.00	2015-07-16 13:48:13
1437072522.08	0.00	546.00	2015-07-16 13:48:42
1437072537.44	0.00	525.00	2015-07-16 13:48:57
1437072559.3	0.00	533.00	2015-07-16 13:49:19
1437072574.76	0.00	555.00	2015-07-16 13:49:34



StrawName_ChamberX_rawdata.txt

StrawName_chamber_fit.pdf

When to quit



- Once the Leak_rate + Leak_rate_error is less than max allowed, Straw passes.
- If the Leak_rate – Leak_rate_error is greater than max allowed, Straw fails
- Every 60 seconds the command line will inform you the status of each straw if it has passed or failed.

Potential problems/things to fix

- Code storage on physics wiki doesn't work for files extensions. Will try Dropbox code with link.
- Sometimes when straws are switched or chamber hits 2000 PPM the code breaks…(trying to figure out why)
- If straws are left overnight, viton leaks and slope becomes larger than limit saying that it fails. Maybe implement 2 hour cutoff on straws?