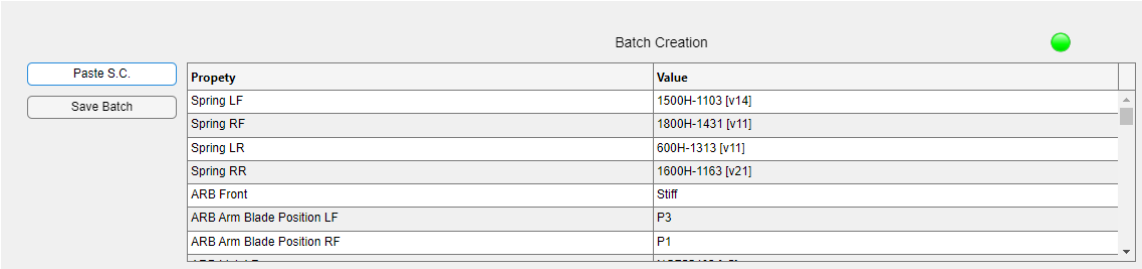
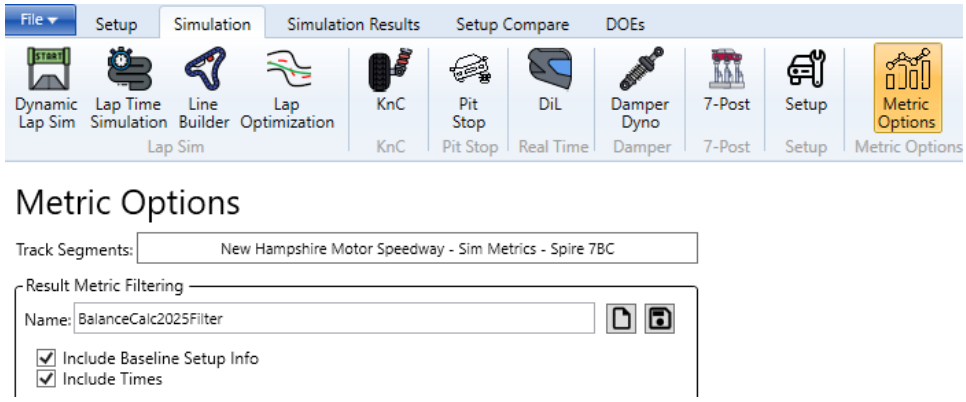
Balance Calculator Creator Guide

1. Creating the DOE batch
    a. Open your sim file and assemble/setup. Make sure your condition set is selected.
    b. Copy the setup compare.
    c. Hit the “Paste S.C.” button in the app

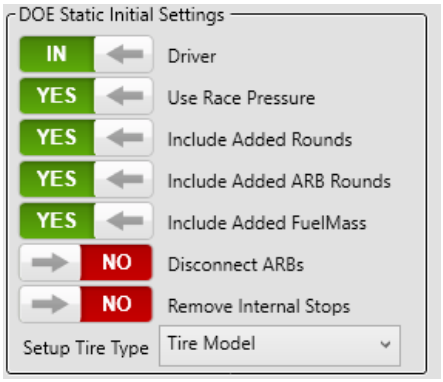


    d. The green light will pop up if the paste was successful.
    e. Hit the “Save Batch” button and save it in an accessible place.
2. Running the DOE
    a. Go to the simulation tab and then Metric Options
    b. Load in the segments and the filter set. Segments are created for almost all tracks, will have “7BC” attached. The current calculator template (v1.2) has 6 segment slots. The values can be changed in different corner names are needed, the formulas are based off a xlookup.

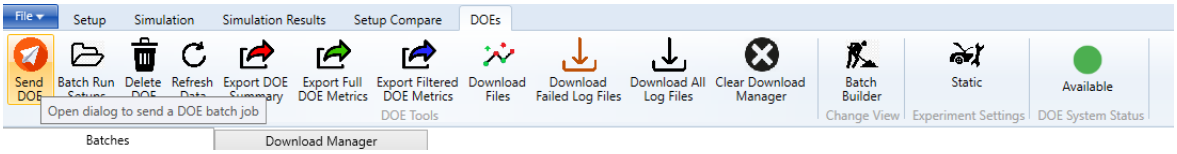


    c. Go to he DOEs page.

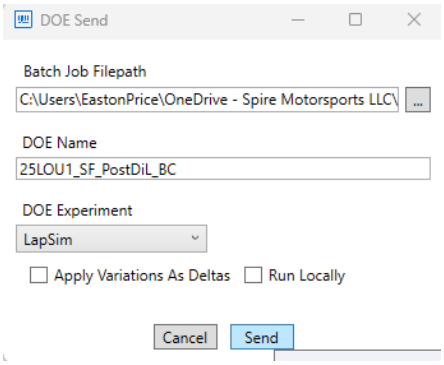
d. Click the Static tab and choose the following selections:

e. 

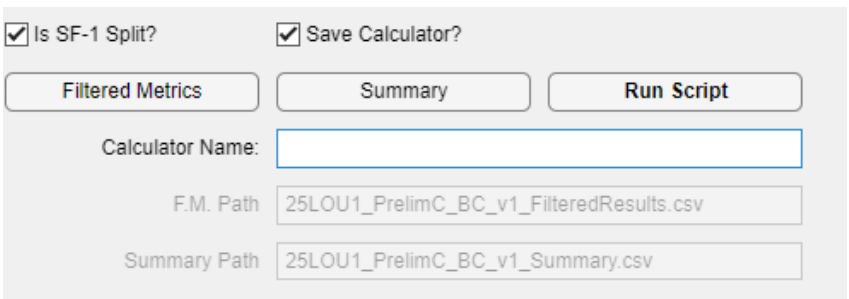
f. Get back to the DOE Batches page. Hit the send button

g. 

h. Load in the previously saved batch. And Hit Send



3. Exporting the DOE data.
   a. Recommend to re-load the filter set. Sim has had some issues before where that resets when you do too many things.
   b. Select your DOE on the batch page, and export **both** the summary and the filtered metrics.
4. Running the app
   a. Select the filepath for the filtered metrics and summary in the top left hand corner.



b. Leave “Is SF-1 Split?” checked if the segment has been split into a and b. This has to be done to include the whole front straight in the segments.

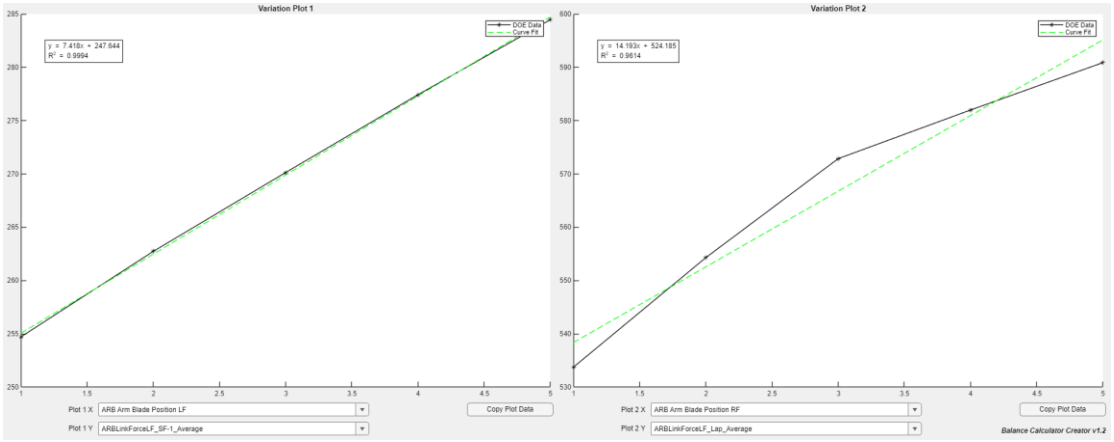
c. Leave the “Save Calculator?” box checked if you want to create a balance calculator. It will be saved in the same directory the metrics were saved to. You can enter a name for it, or if left blank, it will save it as the name of your batch + “_BC”.

    i. If unchecked, it will fill in the data for the variation plots and nothing else, is considerably faster if you just want to see the plots.

d. Hit run script.

e. The script will ask for a template file to save to, select the attached template BC_Template file. (Current version 1.2).

f. Once complete, the data for the plots will also be filled out.

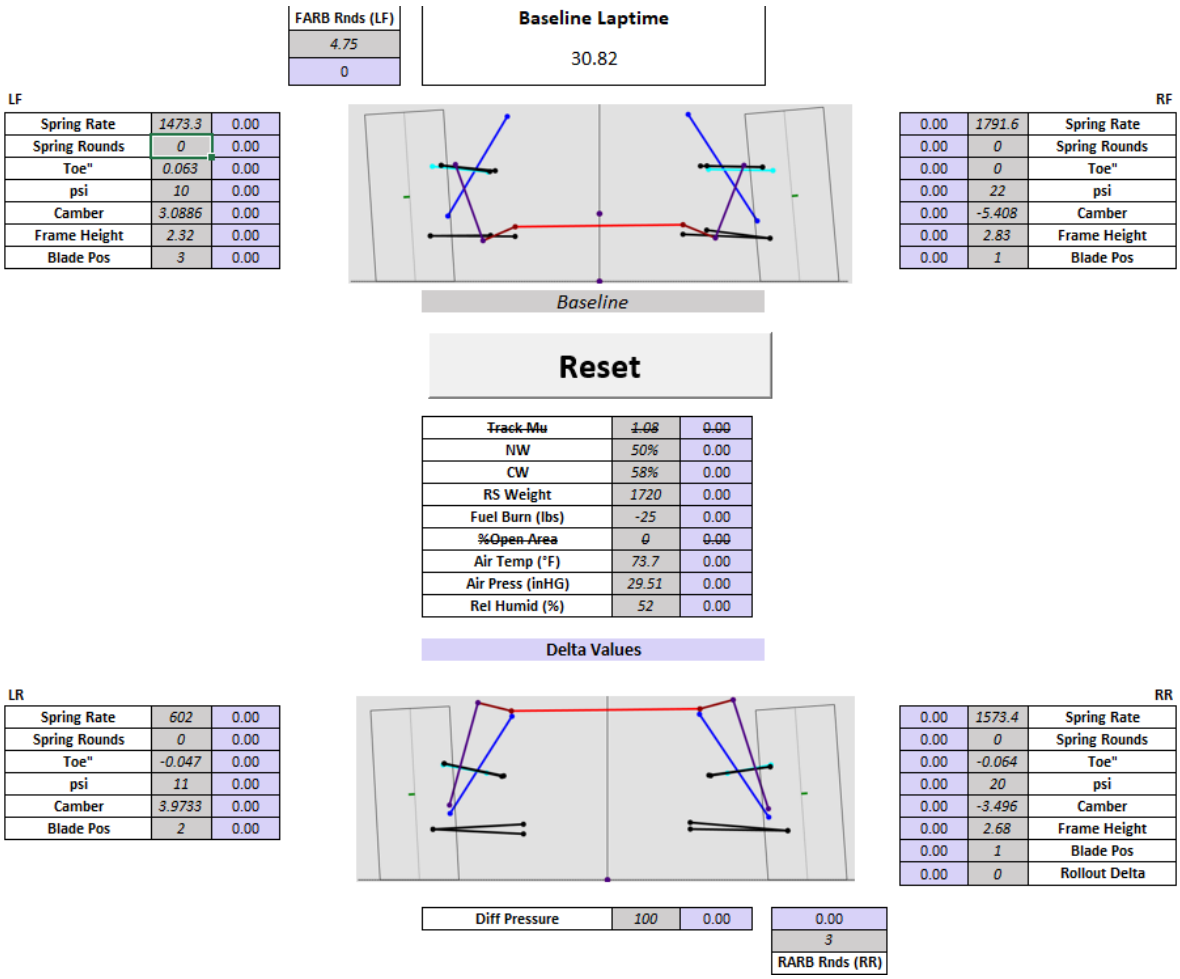
g. 

h. Select the dropdowns to choose what you would like to see plotted. It will either be matched with a 1st degree or 3rd degree curve fit. What is shown is what the calculator will use.

i. You can hit the “Copy Plot Data” button below the plots to copy the data to clipboard if you would like to export it somewhere else.

5. Using the Balance Calculator.

    a. Note: all values calculated are deltas from baseline.



FARB Rnds (LF)
4.75
0

Baseline Laptime
30.82

LF

Spring Rate	1473.3	0.00
Spring Rounds	0	0.00
Toe"	0.063	0.00
psi	10	0.00
Camber	3.0886	0.00
Frame Height	2.32	0.00
Blade Pos	3	0.00

RF

0.00	1791.6	Spring Rate
0.00	0	Spring Rounds
0.00	0	Toe"
0.00	22	psi
0.00	-5.408	Camber
0.00	2.83	Frame Height
0.00	1	Blade Pos

Baseline

Reset

~~Track Mu~~	~~1.08~~	~~0.00~~
NW	50%	0.00
CW	58%	0.00
RS Weight	1720	0.00
Fuel Burn (lbs)	-25	0.00
~~%Open Area~~	~~0~~	~~0.00~~
Air Temp (°F)	73.7	0.00
Air Press (inHG)	29.51	0.00
Rel Humid (%)	52	0.00

Delta Values

LR

Spring Rate	602	0.00
Spring Rounds	0	0.00
Toe"	-0.047	0.00
psi	11	0.00
Camber	3.9733	0.00
Blade Pos	2	0.00

RR

0.00	1573.4	Spring Rate
0.00	0	Spring Rounds
0.00	-0.064	Toe"
0.00	20	psi
0.00	-3.496	Camber
0.00	2.68	Frame Height
0.00	1	Blade Pos
0.00	0	Rollout Delta

Diff Pressure	100	0.00

0.00
3
RARB Rnds (RR)

b. Enter your changes into the purple boxes, the gray boxes are your baseline setup values.
    i. Almost every value should be entered as a delta, i.e. if you want to see what change 1 round in the RR would be, just put 1 in the purple box instead of the total.
    ii. The only values that should not be entered as deltas are:
        1. Blade Positions
        2. RR Rollout Delta
c. Hit the reset button to clear data, note this is run thru a macro so ctrl+z will not do anything after you hit it.