

MSD Team P17453

Weekly Update

Week 10

3/30/17 - 4/6/17

Weekly Accomplishments:

- Received muffler attachments for exhaust valve and o-ring grease to hold o-rings in place
 - Muffler worked excellently
 - O-ring grease worked well as well
- Vibration data looked at and air intake was hypothesized to be causing a jump in the accelerometer readings
 - 2nd muffler attached to intake on inside of pressure vessel
 - Drastically reduced the vibration spike
- Possible problem of SignalExpress averaging data for the FFT before the equilibrium cycle is met was identified
 - One fix is to use an exponential weighting average to give the earlier non-equilibrium cycles less weight
 - Another is to set the program to run twice; the first time includes the non-equilibrium data, and the second time starts at equilibrium (more accurate but takes longer than the exponential weighting average)
- Brackets for back pressure regulator valve machined and incorporated
- Leak discovered on quick connect interface between pressure vessel and back pressure tank
 - Possibly due to the male quick connect fitting not matching the female fitting
- More progress on technical paper and poster

To do by next week:

- Decide which data analyzation style is best
 - Weighted average
 - Run the program twice
- Begin creating operation manual to give detail to different setups of the SignalExpress program
- Test “broken” poppets and see if there is a difference in the vibration frequency spectrum
- Continue working on poster and technical paper
- Continue to update Edge website
 - Begin going through and cleaning up older web pages

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Meeting Notes

4/4/17

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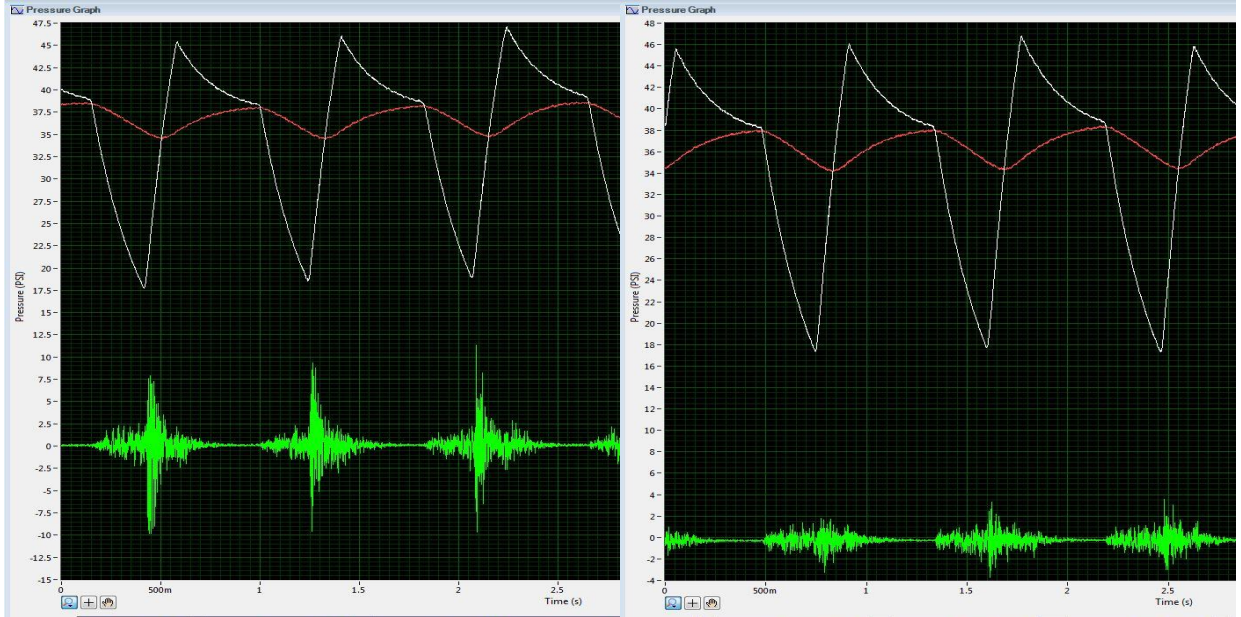
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Meeting Notes

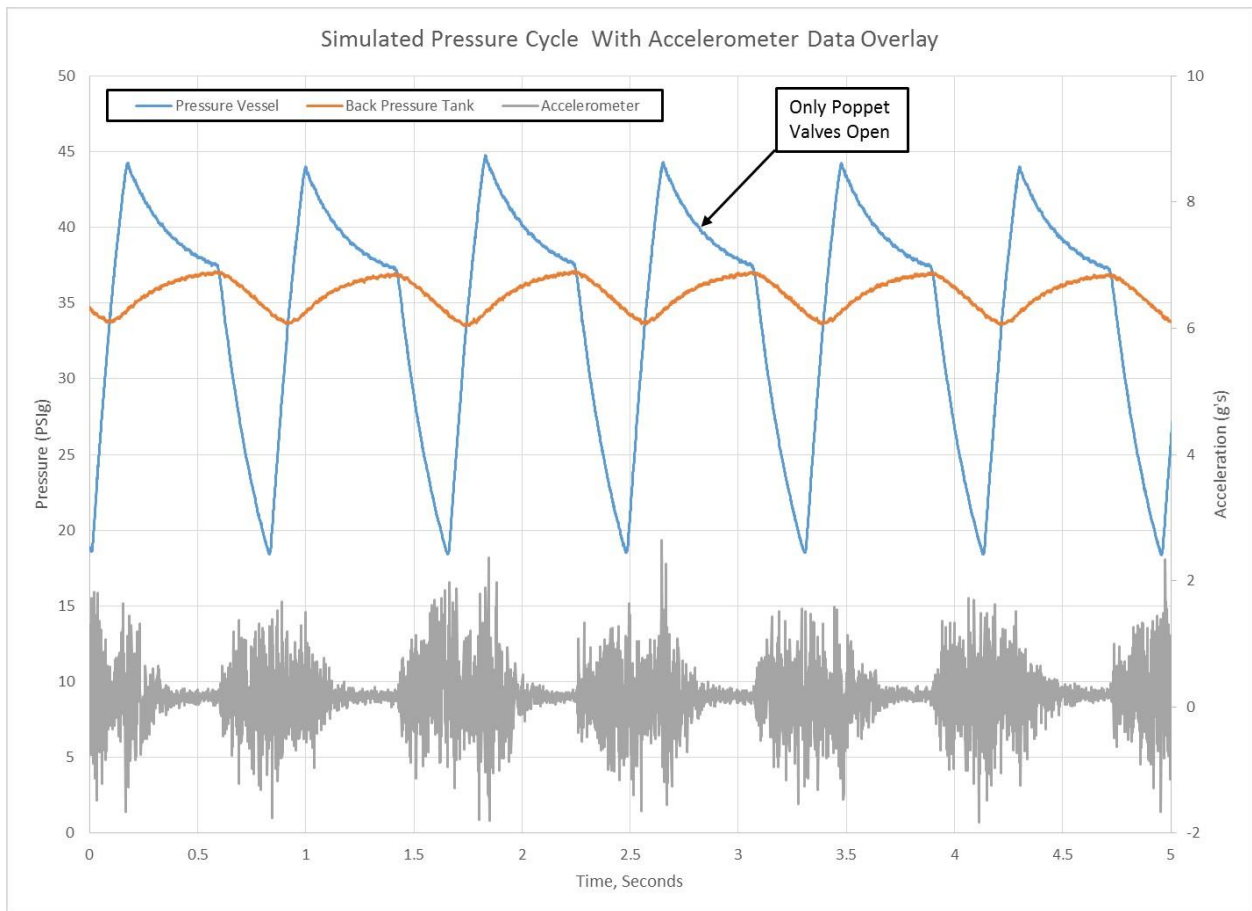
4/6/17

Meeting Accomplishments:

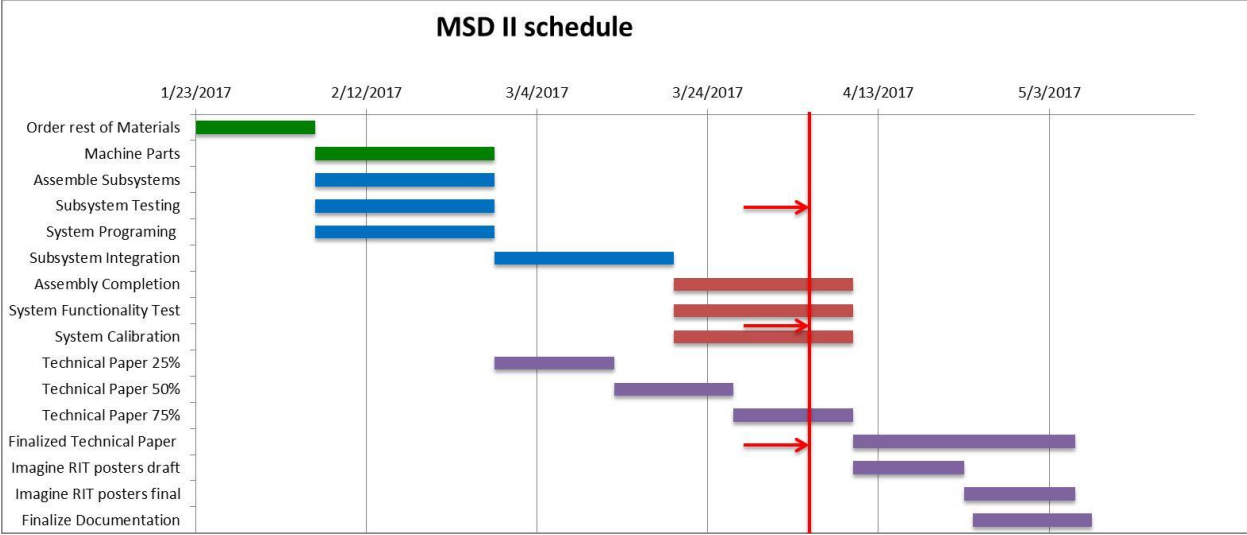
- Solutions to the problem of SignalExpress averaging data for the FFT before the equilibrium cycle were explored
 - One fix is to use an exponential weighting average to give the earlier non-equilibrium cycles less weight
 - Another is to set the program to run twice; the first time includes the non-equilibrium data, and the second time starts at equilibrium (more accurate but takes longer than the exponential weighting average)
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Difference in accelerometer readings (green) before (left) and after (right) muffler was installed on the inside intake hole on the pressure vessel (measured in g's).



Pressure Cycle Created by Rig with Vibration Data Overlay



Gantt Chart: Team progress through week 10.