

Minutes meeting 3

Chair	Secretary	Board writer
Dolf	Vito	Mats

1 Announcements and general information

- Mihai was late by ten minutes or so

2 Decisions

- Order all minutes by subject
- We do not continue investigating the sensor drift any further until we have clarity from the course coordinators
- File sharing happens through GitHub, the use of GitKraken is allowed but not mandatory
- Consult each other earlier
- “GenSet” is not a suitable word for the report
- The RPC list should be included in the appendix, if included at all

3 Presentation (Vito)

3.1 Content

- The exhaust temperature comes from an instruction manual, the error margin is 10 K. This temperature should be verified experimentally.
- Double work has been done by Vito, Thomas and Dolf
- No heat loss at the boundaries of the system have been taken into account. This could be added using formulas in the handbook

3.2 Presenting

- Good use of visual aids
- 31 slides is too many
- Keep the presenting brief; the details are in the SSA
- No contents-of-presentation slide

4 Discussion

4.1 Model

- No CO₂ after the combustion arrow in Dolf's SSA
- c_p and c_v values have been computed for each element separately and then multiplied by the mass ratios of each component.
- fuel composition can be changed easily
- Efficiency has not yet been computed
- Work has been computed (theoretically)
- No inlet and outlet states implemented
- Fuels are modeled in mass ratios, though they are formulated in volume ratios in most literature
- The double tooth mechanism can be used to determine where you are in the thermodynamic cycle\

4.2 Pressure sensors

- Pressure sensor does not drift significantly during one cycle according to the handbook
- On the other hand they say it does later on in the handbook
- The engine cannot simply spin one cycle and then stop; it needs time to get up to speed and therefore drift will occur
- The handbook contradicts itself on this issue

4.3 Statistical analysis

- The data has yet to be loaded into the MATLAB file with matrices
- The graphing code has proven to work on other data sets
- Mihai should be able to fix this

4.4 Other comments on SSA's

- Mats'
 - Contains several formulas that *could* be used but do not *have to* be used
- Lars'
 - Prevent the use of first and second person pronouns (I, you, we, our, us, etc.) and abbreviations (it's, we're, hasn't, etc.)
- Alexdandra's
 - Only one type of ethanol has been used.

5 SSAs

Vito / Lars / Alexandra	<ul style="list-style-type: none"> • Compute the theoretical efficiency of the thermodynamic model • Compute the theoretical work done using the heat equations ($W = Q_{out} - Q_{in}$) and the laws of thermodynamics • Compute the state variables (pressure, volume, temperature, etc.) at the inlet and outlet states and plot these into the p-V diagram • Convert the volume ratios presented in the literature into mass ratios usable for the program and make them easily adjustable for testing different fuel mixtures
Dolf	<ul style="list-style-type: none"> • Hand in the planning before 15FEB
Dolf and Thomas	<ul style="list-style-type: none"> • Write an experimental test plan on how we should test the engine and what variables we wish to collect (and how to collect the variables)
Mihai and Joey	<ul style="list-style-type: none"> • Transform the measurement data into workable matrices in MATLAB • Plot a p-V diagram using the measurement data
Mats	<ul style="list-style-type: none"> • Look into the three types of ethanol used and perform Alexandra's analysis on these again and put it into the report