

Hybrid Powerplant To-Do

Fall 2015 Documentation:

<https://drive.google.com/drive/folders/0B9PuS159UEkGakJXRnZkOWZxYWw>

Fall 2016 Documentation:

<https://docs.google.com/document/d/1YLy7K6p90Mtr1RINZU0BLa0CMMDsIRVXbDdPdrJzDug/edit#>

Read both of these papers to get an idea of what is going on. They give detailed instructions on how to start the motor and how to setup everything so we can get to that point. SOFTWARE PEOPLE: Please be aware that the Fall 2015 team wrote their code for controlling the servos via the Adafruit PWM Servo library specifically for their servo shield. The Fall 2016 team adapted the previous code for use with the Arduino Servo library which doesn't use a servo shield. Use code/make code that uses the Adafruit PWM servo library.

SOFTWARE (Before we can test)

- program ESC @thomas, refer to this:
<https://docs.google.com/document/d/1YLy7K6p90Mtr1RINZU0BLa0CMMDsIRVXbDdPdrJzDug/edit#> and
<https://drive.google.com/drive/folders/0B9PuS159UEkGakJXRnZkOWZxYWw>
- re-calibrate servos for throttle/choke maximum throws. refer to the above documentation. using the Adafruit PWM library, the min/max pwm pulse for these servos should be 150 and 600 respectively. Attach the servos to the throttle/choke push rods and calibrate the servos' pwm min/max pulse to where fully open/closed is on the engine throttle and choke.

SOFTWARE (after a successful start)

- integrate current sensor code into the generator controller code to cut power if there is too much current being output to the battery. reference this (but note, their code is written for the Arduino Servo library, not Adafruit's PWM servo shield library):
<https://docs.google.com/document/d/1YLy7K6p90Mtr1RINZU0BLa0CMMDsIRVXbDdPdrJzDug/edit#>

- Modify the GeneratorControl code to stop the ESC from sending signals to the motor once the gas motor has started so that it doesn't have to be manually disconnected each time. This would involve using the tachometer signal to figure out when to tell the ESC to stop sending signals.

HARDWARE

- attach the throttle/choke servos to the engine pushrods
- build/3D print support cages for the ignition, arduino, ESC, fuel tank, batteries
- begin to brainstorm about how to attach the powerplant to the drone

ELECTRICAL

- rewire the rectifier – it's an absolute mess of wires and it will need to be moved from the piece of wood it's on to something that can be cleanly mounted on the drone or powerplant
- make a tap on one battery for the BEC to attach to. It is only a 6S BEC and we need 12S to run the ESC so make sure you do not tap it in to both batteries. An easier solution might be to just buy a 12S BEC that can handle over 44.4V
- wire current sensor up to the rectifier's output