

MEETING MINUTES

Topic: Hardware Review 1

Friday, October 5, 2018

10:15 am – 10:45 am

Minutes recorded by Jacob Barker

Meeting called by Dr. Oman

Attendees: Jacob Barker, Samm Metcalfe, Ashley Shumaker (+Dr. Oman, Amy Swartz)

Table 1. Record of meeting.

10:15 am to 10:30 am	Quick Discussion Before Hardware Review <ul style="list-style-type: none">● Review updates to share with Dr. Oman<ul style="list-style-type: none">○ Individual analyses chosen○ Samm redesigned combustion chamber○ Ashley has website updated○ Jacob purchased and assembled cart	Capstone Room
10:30 am to end	Hardware Review <ul style="list-style-type: none">● Our team is confident we are 50 percent complete with our project● We have purchased essentially all components necessary for this project save for 3D printing<ul style="list-style-type: none">○ Acrylic tubing○ Shaft—purchased and machined○ Bearings○ Thermocouples, connectors, and DAQ○ Utility Cart (also assembled)○ Pressure transducers (from previous team)○ Air compressor (from previous team)○ Band heater and thermal fuse (from previous team)● 3D printing<ul style="list-style-type: none">○ Samm designed 3D printed part to test fit interference fit for stators in acrylic tubing as well as shaft and bearing fits<ul style="list-style-type: none">▪ Interference fit is too small, will remake to test again▪ Once this is completed, we will know proper blade diameter and can begin printing blades● CAD Modelling<ul style="list-style-type: none">○ Almost complete, just working on details○ Most recent update is Dyson-inspired combustion chamber	Room 119

	<ul style="list-style-type: none"> • Dr. Oman noted support material may cause problems—may be difficult to remove <ul style="list-style-type: none"> • Consider printing in two or four sections to aid in removal of support material <ul style="list-style-type: none"> ○ If this route is taken, experiment with different adhesives/epoxies to see which work best • Another alternative: RapidLab <ul style="list-style-type: none"> ○ Some printers at RapidLab use dissolvable support material, may eliminate need to print in four sections • Samm noted that his goal was to print without using any support material <ul style="list-style-type: none"> ○ Dr. Oman may be able to print this part in her office—collaborate with her further on this next week • Data Acquisition <ul style="list-style-type: none"> ○ Pressure Transducer Manifold <ul style="list-style-type: none"> • Only have two pressure transducers and need to measure pressure at four states • Designed manifold/valve system to allow each transducer to measure two states using brass fittings and valves ○ LabVIEW <ul style="list-style-type: none"> • Client requested integration with LabVIEW for real-time data acquisition. Jacob and Ashley will work on this for next hardware review. ○ Arduino Integration? <ul style="list-style-type: none"> • Amy noted we may be able to use Arduino instead of LabView which would better allow for real-time data acquisition • May be too late for this, talk to Dr. Trevas if interested • Purchased and assembled cart <ul style="list-style-type: none"> ○ Installed top tray upside-down in order to have flat mounting surface for device. Plan to hard mount device to top tray, and hide wiring/tubing underneath for safety and aesthetics • Other considerations <ul style="list-style-type: none"> ○ Our team was concerned by how quickly the previous team’s air compressor ran empty We are looking at getting a second tank from the junkyard to extend the runtime ○ Limiting factor is cart size 	
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	<ul style="list-style-type: none">● Rough schedule<ul style="list-style-type: none">○ Currently working on Individual Analyses○ Once these are completed and correct blade size is determined, we can begin assembly very quickly	
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