

Department of Electrical & Computer Engineering

Airborne Sampling/Sensing of Distal Volcanic Ash

Project Group Meeting #19

Agenda

Date: Friday August 26th 2016

Time: 10.30am

Venue: VH 457

Chair: Mike Shanaher

Secretary: Jake Campbell

**1. Apologies**

Parth Thakur

**2. Minutes**

(Attached)

**3. Matters arising**

* No matters arising other than usual individual progress

**4. Correspondence**

All CC’d in all correspondence

**5. Progress Reports:**

* Ryan – Wind Tunnel Testing
* Mike – Telemetry
* Jamie – Sensor testing
* Jake – Thermal modelling

**6. Other business:**

NIL

Minutes from last meeting below:





Department of Electrical & Computer Engineering

Airborne Sampling/Sensing of Distal Volcanic Ash

Project Group Meeting #18

Minutes

**Minutes of the weekly meeting 19 August 2016**

**Present:**

Maan Alkaisi, Adrian Weller, Jamie Van de Laar, Jake Campbell, Parth Thakur, Mike Shanaher, Ryan Taylor

**1. Apologies:**

**-**

**2. Minutes from last meeting**

* (refer to Minutes, August 12 2016)

**3. Matters arising**

* No matters arising other than usual individual progress.

**4. Correspondence**

* All are CC’d in emails

**5. Progress Reports:**

* Ryan Taylor
  + Have cyclone capture system designs to test but need to get wind tunnel up and running. Have tried alternative power supplies but may need to resort to using LiPo batteries.
  + Reconsidering the use of carbon SEM tape for sampling but providing a heat source to make viable.
  + Will get some carbon SEM tape from within UC to test.
  + Need to consider heat source and how to transfer heat.
* Mike Shanaher
  1. Continued to work on real-time graphing in Mission Planner. Found code to modify but it didn’t work.
  2. Posted to developers forum to find the solution. Now have real-time graphing of ash data.
  3. Now needs to work on program that gets data from the Raspberry Pi to the Pixhawk then merge that code with the sensor interface to complete the telemetry system.
* Jamie Van de Laar
  1. Presented results from some sensor testing.
  2. Suggested that the OPC-N2 seems to give the most consistent measurements.
  3. Identified need to conduct more tests that focus on removing variables. Eg. Long time to remove larger particles, clean air tests for noise floor etc.
  4. Now needs to talk to George (UC Geology) to measure flow rates.
* Jake Campbell
  1. Investigated modelling heat and power consumption through the system.
  2. On the order of 400W heat loss with only 200W generation at 10 degree internal temperature, -20 degree external temperature. Equilibrium occurs at 0 degree internal temperature.
  3. Needs to refine model to include other things such a heat source location and internal air/plastic thermal insulators.
  4. Will look into using software coupled with SolidWorks models to get the best estimation of heat loss and internal temperatures.
* Parth Thakur
  1. Has a real-time graph of analog sensor data. This is useful for testing and debugging the sensor hardware.
  2. Tested without ash and has stable “zero” reading.
  3. Tested qualitatively by sprinkling some ash on the plates and successfully detected the presence of ash.
  4. Focussing on getting the wind tunnel running so can test quantitatively.

6. **Other business:**

* Maan:
  1. Identified need to focus on what can be presented at inspections as far as design, development and testing is concerned.
* Adrian:
  1. Still no reply from CAA, possibly not relevant for the remainder of this project from our perspective. Test flights may be performed by DTA at a later date.
  2. DTA do not require the wind tunnel motor programmer. We can keep it until the end of the project.

**Meeting ACTION LIST**

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| --- | --- | --- |
| **ACTION** | **ASSIGNED TO** | **DUE DATE** |
| Complete presentation paragraph | All students | 26/08 |
| Confirm inspection location | All students | Inspection |
|  |  |  |

**Next meeting date: 26th August 2016, 10.30am**