

Interactive comment on “Technical Note: A low cost Unmanned Aerial Vehicle for ship based science missions” by E. Waugh and M. Mowlem

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Hi John,

Thanks very much for your comments. I will try and address them here.

I have avoided including too much technical detail about the aircraft in the paper as I thought it would not be of interest to the audience, who are probably mostly concerned with what it can do, rather than how it works. That said I would be happy to add any information you think particularly relevant.

1) The power plant is a Saito FG-36 4-stroke petrol engine and is connected to the fuselage through a vibration reducing mount. We have not deliberately set out to measure vibration, although the fast recording rate of the autopilot (1 kHz) does allow you to

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capture this (engine is normally < 150 Hz) and in all of our test flights we have seen no evidence of a problem. There are certainly no resonances with the structure or other bad effects.

2) The Flight Control System uses a waypoint tracking algorithm that continuously minimises the distance between the real track and the ideal track which stops a cross wind causing it to always arrive at a waypoint heading directly into the wind. However, this algorithm was not developed by me so I have not mentioned it explicitly. All flight data is continuously logged and all is available to the payload as required. The RF modem used has a quoted range of more than 20 km but this has not been tested.

3) The Flight Control System is soft mounted within the fuselage as are payloads when they are added. The available volume is around 5->10 litres depending on shape. There is no heat build up within the fuselage from the electronic components because of their very low power consumption (FCS < 2W) although temperature is monitored and recorded.

4) It is our mission type that allows us to operate this kind of vehicle. You cannot perform any automatic aerial work within UK airspace without explicit CAA approval but for operation in remote areas like the deep ocean especially where you restrict flight to within the range of the ships radar there should be no issues.

5) We did look at buying just the autopilot but felt that building our own gave us the most control and the ability to do things like adding advanced flight algorithms and black box recording.

Interactive comment on Ocean Sci. Discuss., 7, 757, 2010.