

Utilization of an Unmanned Observation Aircraft as a Tool for Field Survey

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Recent advances in integrated circuit technology enable manufacture of a small lightweight remote control plane. Those planes are utilized for military purposes, forest investigation, volcano disaster prevention, etc. However, most of them are evolving into highly automated unmanned planes consuming a large amount of employment cost. Few attempts have been made to develop an observation unmanned airplane as a tool which researchers can operate easily. The status quo that an unmanned aircraft is not employed for science research of precursory phenomena of volcanic eruption for which monitoring budget is not provided will not change. Then, the personal radio control observation airplane as an auxiliary tool in case a geologist or the research staff of self-governing body investigates dangerous areas, such as a volcano vent, by himself was developed. The major reasons blocking the spread of the utilization of observation unmanned airplanes are "the problem of crash" and "the problem on operation".

"The problem of crash" includes the following three points.

(1) The problem of a possibility of inflicting an injury on people or destroying property.

(2) The problem of the damage done to a landscape when the wrecks of the crushed plane are left in a cliff, a crater, etc. where we cannot approach.

(3) The problem of the budget shortage interrupting the research with limited research fund. "The problem on operation" includes the following two points.

(a) The problem where an investigator cannot control the plane by himself.

(b) The problem where an investigator cannot carry the plane to the investigation field.

I present the newly developed unmanned radio control plane which can be easily used as a tool and which solves these problems. The specification of the airplane is listed as follows.

Name: HANDAI SKY-1 (Basalt-color)

Maximum length: 95 cm

Maximum width: 90 cm

Construction Material: EPP (Expanded polypropylene)

Weight: 420 g (with battery)

Payload: 300 g maximum

Battery: 11.1V Lithium-polymer battery

Propulsion: Ducted fan with brushless motor

Thrust: 500 gf

Control: 4 ch (motor, aileron, elevator, rudder)

Control range: 1 km