

PROSES MANUFAKTUR DAN PERHITUNGAN LETAK TITIK *CENTER OF GRAVITY* (CG) PADA PESAWAT TANPA AWAK EAGLE-X MIRIP BURUNG

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ABSTRAK

Pesawat UAV (Unmanned Aerial Vehicle) adalah pesawat yang dikendalikan melalui perangkat electronic yang telah diprogram supaya dapat diterbangkan melalui jarak jauh dan tanpa awak. Pesawat UAV sendiri banyak dimanfaatkan oleh beberapa kalangan seperti kalangan sipil, militer, dan pertanian. Dalam dunia pertanian sendiri pesawat UAV mempunyai peranan penting seperti mengusir hama burung pada lahan padi dan menyebarkan pupuk dalam jumlah besar. Maka dari itu penulisan karya ilmiah ini membahas tentang manufaktur pesawat EAGLE X serta menghitung letak center of gravity yang memiliki misi yaitu untuk mengendalikan hama burung pada lahan pertanian.

Dalam proses manufaktur pesawat EAGLE X ini menggunakan metode laser cutting, dan hot wire, serta bahan yang digunakan yaitu kayu balsa, karbon stick, kertas monokote dan polyfoam. Penggunaan kayu balsa meliputi former, ribs, leading edge, dan trailing edge, dan penggunaan polyfoam meliputi skin pada fuselage dan tail, kertas monokote digunakan untuk melapisi skin pada wing dan tail, dan penggunaan karbon stick untuk penguat wing. Setelah pesawat selesai manufaktur dilakukan penimbangan dan mengukur arm untuk menghitung weight and balance pada pesawat tersebut.

Proses manufaktur pesawat meliputi perakitan former, wing, dan tail yang telah dipotong dengan laser cutting dan hot wire, serta ada beberapa penambahan part seperti engine mounting, dan pengunci wing. Hasil dari manufaktur didapatkan perhitungan bahwa pesawat EAGLE X memiliki letak center of gravity pada 18,863 cm dari datum (nose) pesawat mengalami nose heavy, sedangkan pada aktualnya yaitu 18,5 cm dari datum (nose).

Kata kunci: UAV, Hama Burung, EAGLE X

MANUFACTURING PROCESS AND CALCULATION OF WEIGHT AND BALANCE OF EAGLE-X UAV LIKE A BIRD

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ABSTRACT

UAV (Unmanned Aerial Vehicle) is aircraft controlled through electronic devices that have been programmed to be flown over long distances and without crew. UAV is widely used by several groups such as civilians, military and agriculture. In the world of agriculture itself, UAV have an important role, such as repelling bird pests on rice fields and spreading fertilizers in large quantities. Therefore, the writing of this scientific paper discusses the manufacturing of EAGLE X aircraft and calculates the location of the center of gravity which has a mission, namely to control bird pests on agricultural land.

In manufacturing process, the EAGLE X aircraft uses laser cutting, and hot wire methods and the materials used are balsa wood, carbon sticks, monocote paper and polyfoam. The used of balsa wood includes formers, ribs, leading edges, and trailing edges, and the use of polyfoam includes skins on the fuselage and tail, monocote paper is used to coat the skins on the wings and tail, and the use of carbon sticks for wing reinforcement. After the aircraft is finished manufacturing, it is carried out weighing and measuring the arm to calculate the weight and balance of the aircraft. The manufacturing process includes the assembly of the former, wing and tail which has been cut with laser cutting and hot wire, and there are several additional parts such as engine mounting and wing locking. The result of the calculation is that the EAGLE X plane has a center of gravity at 18,863 cm from the datum (nose) the aircraft is nose heavy, while in fact it is 18.5 cm from the datum (nose).

Keyword: UAV, Bird Pests, EAGLE X