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Construction of Large Scale UAVs Using Homebuilt Composite Techniques

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Abstract : The unmanned aerial system (UAS) industry is growing at a rapid pace. This growth has increased the demand for low cost, custom made and high strength unmanned aerial vehicles (UAV). The area of most growth is in the area of 25 kg to 200 kg vehicles. Vehicles this size are beyond the size and scope of simple wood and fabric designs commonly found in hobbyist aircraft. These high end vehicles require stronger materials to complete their mission. Traditional aircraft construction materials such as aluminum are difficult to use without machining or advanced computer controlled tooling. However, by using general aviation composite aircraft homebuilding techniques and materials, a large scale UAV can be constructed cheaply and easily. Furthermore, these techniques could be used to easily manufacture cost made composite shapes and airfoils that would be cost prohibitive when using metals. These homebuilt aircraft techniques are being demonstrated by the researchers in the construction of a 75 kg aircraft.

Keywords : composite aircraft, homebuilding, unmanned aerial system industry, UAS, unmanned aerial vehicles, UAV
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