The Office of Technology Management

UNIVERSITY OF TEXAS ARLINGTON

Tech ID: UTA 16-59

Systems and methods for controlling the flight of an aircraft with internal mass motion

Inventors: Dr. Atilla Dogan and Sampath Reddy Vengate

TECHNOLOGY NEED

In the current design of aircraft, aerodynamic control surfaces are used as moment generation mechanism to control the motion of the airplane moving in the air. While control surfaces have been successfully used for almost all types of airplanes, they come with some drawbacks. Aerodynamic drag is created by the deflection of the control surfaces, which leads to more power consumption, and thus reduced range and endurance. They have low control authority in low airspeed flight. Their deflection disturbs the aerodynamic efficiency of the lifting surfaces, such as adverse yaw effect. Deflection of surfaces are not desirable for stealth aircrafts and hypersonic vehicles.

INVENTION DESCRIPTION/SOLUTION

UTA researchers have developed a linear electric actuator in an airplane with attached internal masses for generating moments in place of aerodynamic control surfaces. Replacing these control surfaces would result to elimination of drag increase and lift loss on the aircraft caused by deflection associated with conventional control surfaces and consequently improve power consumption efficiency.

APPLICATIONS

- Aircraft industry
- Unmanned aerial vehicle
- Unmanned underwater vehicle

KEY BENEFITS

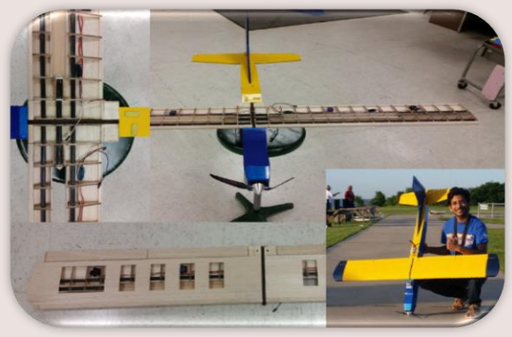
- Reduction of drag forces in Aircraft propulsion
- Reduction in power consumption in Aircraft
- Cheaper running costs of aircraft
- Better energy efficient design of aircraft

STAGE OF DEVELOPMENT

Prototyped and tested

INTELLECTUAL PROPERTY STATUS

Patent pending



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