

A Stall Prevention and Recovery System For Airplanes

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BRIEF DESCRIPTION

An advanced stall recovery flight control system that significantly enhances airplane safety by preventing and recovering from stall conditions.

SUGGESTED USES

- » Commercial aviation, to enhance safety and control during all flight phases, especially takeoff and landing.
- » Unmanned Aerial Vehicles (UAVs), to improve resilience to stall in varied operational scenarios
- » General aviation, where pilots of smaller aircraft can benefit from enhanced stall recovery capabilities.
- » Flight training schools, as a teaching tool for advanced stall recovery techniques.
- » Military aviation, for improved combat and training aircraft safety.

FEATURES/BENEFITS

- » Increases the chance of recovery from stall and spin/stall situations, enhancing overall flight safety.
- » Generates more than four times the roll angle near stall conditions compared to conventional methods, without reversing control sensitivity.
- » Provides an integrated autonomous solution for stall recovery, reducing pilot workload and error.
- » Capable of operating effectively near and during stall conditions, where traditional systems may fail.
- » Employs a novel roll mechanism that maintains constant sensitivity near stall, facilitating reliable feedback stabilization.

TECHNOLOGY DESCRIPTION

The Stall-Recovery Flight Control System (SRFCS) is an innovative solution designed to address the critical issues of airplane stall, which is a major cause of loss-of-control incidents in aviation. Utilizing a novel roll mechanism, the SRFCS replaces conventional aileron inputs with an oscillatory control of flight surfaces to maintain and recover from stall conditions effectively. This system is capable of generating significant roll angles even when traditional control methods fail, ensuring safer flight operations especially in critical near-stall situations.

STATE OF DEVELOPMENT

Concept was demonstrated using computer simulations and currently undergoing testing at the UCI wind tunnel. Flight demonstrations are in the initial planning stage.

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OTHER INFORMATION

CATEGORIZED AS

- » **Transportation**
- » Aerospace

RELATED CASES

2019-074-0

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,273,903	03/15/2022	2019-074

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