



Aeronautics

Aircraft Active Pylon Noise Control System

Active control mechanism of jet engine noise sources to increase noise reduction from shielding

This technology is a new type of aircraft pylon design for noise control. A pylon connects the engine to the airframe of an aircraft. This design uses air passing through the pylon to actively disrupt the jet engine exhaust stream after it exits the engine, disrupting and redistributing the axial and azimuthal distributed sources of jet noise from the aircraft.

BENEFITS

- ➔ Can be retrofit into existing aircraft pylon designs
- ➔ Reduces noise where jet exhaust interacts with control surfaces (flaps, ailerons, etc.)
- ➔ Redistributes noise sources within jet exhaust to enhance shielding of jet noise by the airframe surface (when applied to aircraft with engines above wings or fuselage such as on a Hybrid Wing Body)

APPLICATIONS

- ➔ Commercial aircraft
- ➔ Business jets
- ➔ UAVs

technology solution



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THE TECHNOLOGY

For use on aircraft, the air intake would be on the pylon at an aerodynamically advantageous location. The delivery system would consist of pipes, a pump or pressure regulator and a plenum chamber. The air is piped through the internal pylon structure in pipes by a pump and to the plenum chamber. The injection site for the most common embodiments would be the shelf of the pylon (adjacent to the core nozzle flow) and the trailing edge of the pylon. The objective of the injection is to alter the trajectory of the core nozzle flow thereby impacting how the core and fan streams mix and the overall trajectory of the core and fan streams together. The injection site on the trailing edge has the objective of minimizing the wake of the pylon by injecting higher pressure and velocity air through the active aircraft pylon trailing edge injector. At cruise conditions, injection from the pylon trailing edge can also reduce the drag contribution of the pylon to the total aircraft drag.



Invention is best applicable with pylon downstream of the exit plane of the core nozzle exit (as pictured).

PUBLICATIONS

Patent No: 9,022,311

Patent Pending

National Aeronautics and Space Administration

The Technology Gateway

Langley Research Center

Mail Stop 151
Hampton, VA 23681
757-864-1178
LARC-DL-technologygateway@mail.nasa.gov

<http://technology.nasa.gov/>

www.nasa.gov

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