



AEROSPORT MODELING

RUDDER TRIM

Segment:

MOBILITY PARTS PROVIDERS | Engineering companies

Application vertical:

MOBILITY AND TRANSPORTATION | Aircraft

Application type:

FINAL PART: Short runs

THE CUSTOMER AEROSPORT MODELING

COMPANY DESCRIPTION

Aerosport Modeling & Design was established in September 1996, and since then, they have worked to produce the highest-possible quality prototypes, appearance models, working models, and machined parts, and to meet or exceed client expectations.

The company strives to be seen as a partner to their clients and an extension of their design and development team, not just a supplier of prototyping services.

Aerosport Products spun off from sister company Aerosport Modeling & Design in 2009 to develop products for experimental aircraft, the first of which was the RV-10 Carbon Fiber Instrument Panel.

Aerosport Products' goals are to continue the traditions of Aerosport Modeling & Design: to deliver innovative products and help experimental aircraft builders by providing high-quality, high-value products to assist them in completing their builds.

INDUSTRY SEGMENT: Parts providers

INDUSTRY SUB-SEGMENT: Engineering companies

APPLICATION VERTICAL: Mobility and transportation

INDUSTRY SUB-VERTICAL: Aircraft

3D PRINT MAIN BENEFIT

- Performance
- Customization
- Cost Reduction
- Time Reduction

FINAL PART: SHORT RUNS RUDDER TRIM

APPLICATION

Some planes are equipped with small tabs on the control surfaces (e.g., rudder trim tabs, aileron tabs, elevator tabs) so the pilot can make minute adjustments to pitch, yaw, and roll to keep the airplane flying a true, clean line through the air. This improves speed by reducing drag from the larger, constant movements of the full rudder, aileron, and elevator.

Many airplanes also have rudder and/or aileron trim systems. On some, the rudder trim tab is rigid but adjustable on the ground by bending: It is angled slightly to the left (when viewed from behind) to lessen the need for the pilot to push the rudder pedal constantly in order to overcome the left-turning tendencies of many prop-driven aircraft. Some aircraft have hinged rudder trim tabs that the pilot can adjust in flight.

When a servo tab is employed, it is moved into the slipstream opposite of the control surface's desired deflection. For example, in order to trim an elevator to hold the nose down, the elevator's trim tab will actually rise up into the slipstream.

Aerosport Modeling redesigned the rudder trim system to reduce the need to manufacture different parts and to shorten the assembly time. They converted the entire system from a machined and standard assembly of 26 parts to a four-part assembly that is 3D printed on demand without the need to buy or machine long-run productions of each metallic part.

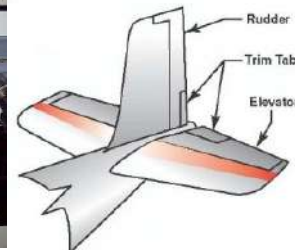
This rudder trim system is a spring bias system that holds the entire rudder surface to the right or left and still allows for complete movement.

MATERIAL

HP 3D HR PA 12

POST-PROCESSING

Bead blasting
Dyed in black



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TRADITIONAL MANUFACTURING

Assembly of 26 different machined and standard parts



ADDITIVE MANUFACTURING/3D PRINTING

Assembly reduced to only four 3D printed parts

