

Aerospace

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Let's Talk 877-749-8548

Closed Loop Pressure Control Devices for Aerospace Industry

The aerospace industry relies on precise and high-quality testing in the production and performance of their assemblies.

Closed loop control is vital for use in flight simulators and the testing of instrumentation and aircraft systems.

Constant changes in pressure and altitude demand exact instrumentation to ensure the safe operation of aerospace equipment.

Among the various areas where closed loop pressure control devices are utilized:

- Stress tests of aircraft components because of frequent altitude changes
- Regulate the mixture of fire suppression foam and water for airport fire trucks
- The use of air cylinders to control force feedback in flight simulators
- Control pressure of pneumatic bladders in G-suits in flight simulators
- Fatigue tests for aircraft fuselage
- Apply repeatable pressure to pressure gauges and transducers during the calibration process

Fuselage Leak Testing

Proportion-Air provides a reliable, cost-effective method for pressurizing the fuselage to test leakage. With our products, the fuselage is pressurized electronically and automatically to reflect the air pressure at any altitude, thus allowing a great number of tests without the fuel spent on actual runs. The repeatability factor is extremely high: the same command signal from the same direction gives the same pressure within as high as +/- .02 of full scale calibration.

Fuselage Fatigue Testing

How many times can you take off, reach altitude and pressurize a cabin, then go back to sea level before you see some sort of fuselage fatigue anomalies?

If an aircraft manufacturer has to do this testing real time using real fuel, the expense is tremendous. With our products, the fatigue testing can be done by pressure testing the cabin electronically. This means a simulation opportunity that is extremely cost effective, but better than a computer simulation in that it simulates actual conditions.

Oxygen Mask Testing

Military fighter pilots wear oxygen masks at certain altitudes and in combat. Making sure the correct amount of oxygen is fed through to the masks is critical, and our regulators are used to test the correct setting of supply pressure.

Along with that, simulations must duplicate cabin pressure changes. With our electronic pressure regulator the customer controls the level of vacuum in the chamber to simulate the aircraft being at a certain altitude. We also control the pressure of oxygen to simulate the oxygen supply in the pilot's mask. Pilots can practice like they're flying without actually flying.

Commercial aircraft have pilot masks that are used in the same way. Although the passenger airliners have different masks, the regulators are relatively the same.

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Flight Simulator Controls

Fuselage Fatigue Testing

Fuselage Stress Test

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Aircraft Ice Testing

Proportion-Air products are also used to regulate water pressure to simulate icing conditions. Our valves control water dispensation onto to the wings in both wind tunnel simulations and altitude in-flight simulations.

Foreign Object Testing

To simulate a bird strike or foreign object strike in the engine, manufacturers test with air cannons that repeatably launch a series of objects using compressed air, which is relatively inexpensive and not explosive. A pressure reservoir is pressurized precisely so that velocity of the object can be tightly controlled.

Flight Simulators

A combat flight suit is really a G-force suit. When pilots start making turns in their aircraft, they pull back on the controls, which pulls up the plane's nose. This exerts extra gravitational forces on their bodies. Increased G-forces cause blood the heart is pumping toward the brain to rush down toward the legs, causing the pilots to pass out.

To compensate, pneumatic bladders within the suits apply low pressure to their extremities to keep the blood from rushing into the legs. Our products simulate this for the pilot training. This is particularly challenging because it's a low pressure application – less than 1 psi.

Our products have a variety of applications for simulations, with high resolution, high repeatability and low pressure control being required. For more information about our product applications in the aerospace industry, [contact us](#) today.



Call Us from Indianapolis : 317-689-0608

Contact Us

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About Proportion Air

Proportion-Air, Inc. manufacturers [electronic air pressure regulators](#) and [air flow control valves](#). Proportion-Air strives to be a leader of remarkable performance, exhibiting the qualities that define exceptional service. [google-translator]



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