Meggitt Control Systems

Aerospace valves
Why we should be your aerospace valve supplier

1. We know your business.
   We have been involved with aerospace since the early 1900s. We have built our business on designing and manufacturing aerospace valve products that continually set new standards for performance, reliability and value.

2. We routinely do what others can’t.
   Our industry specialists work with you to understand your needs and create products to meet them. The result is often a breakthrough in system performance and efficiency.

3. We work fast.
   In line with market demands, our extensive technical experience and resources allow us to deliver state-of-the-art products within increasingly tight schedules.

4. We are a total value supplier.
   Meggitt Control Systems' experience in pneumatic, fluid control, thermal management and electro-mechanical equipment and sub-systems enables us to provide wide-ranging solutions for new-generation aircraft.

5. We are there for you.
   Our team of factory-trained global customer support specialists are on three continents, providing continuous repair, overhaul and parts support to business, commercial and military operators around the world.

We are Meggitt Control Systems

Creating broad-based solutions

Meggitt Control Systems is a global leader in pneumatic, fluid control, thermal management and electro-mechanical equipment and sub-systems. We use the best minds to develop solutions that help our customers’ products perform better.

And we bring together a broad range of experts in aerospace valves, high-pressure ducting, thermal management and other aerospace disciplines to meet an array of engine and airframe pneumatic, fluid and temperature control needs.

We work with commercial, military and governmental customers in aerospace and defense primarily but deploy our technologies in specialist areas of the energy market.

Global support

The goal and the commitment

Designing, manufacturing and delivering industry-leading products is only part of what customers expect from suppliers.

We get to know what you need and wrap our service and support program around your requirements.

Meggitt Control Systems’ team of factory-trained global customer support specialists are located on three continents, providing continuous repair, overhaul and parts support to business, commercial and military operators around the world.
Performance under pressure

Today’s business, commercial and military aircraft and helicopter operators are demanding greater levels of efficiency and reliability to reduce direct and unscheduled operating costs.

According to a major commercial airframe manufacturer, a 2% increase in the overall efficiency of a current single-aisle airliner can save the operator over $100,000 in direct operating costs per year, per aircraft.

To help achieve their goals, airframe, engine and systems manufacturers are turning to us for pneumatic and fluid control solutions.

Meggitt Control Systems aerospace valves are designed, manufactured and tested to set the industry performance standard for these new-generation systems—a capability based on an experienced global team drawn from the industry’s most recognized and respected names in pneumatic and fluid control—Whittaker Controls and Dunlop Equipment.

We specialize in solutions

While our innovative valves lead the market, we provide more than hardware.

Whether our customers are manufacturing aero-engines or airframes, we pride ourselves in delivering optimized valve solutions based on very specific requirements.

Our aerospace valves not only excel in performing under extreme conditions to increase jet engine efficiency and reliability, their advanced design and materials help reduce overall aircraft weight—lowering fuel consumption and operational and maintenance costs.

These business, commercial and military aviation leaders trust Meggitt Control Systems to deliver the highest possible levels of performance, reliability and value in aerospace valves.

Who we work with

• Airbus
• BAE Systems
• Boeing
• Bombardier
• Embraer
• General Electric
• Goodrich
• Hamilton Sundstrand
• Pratt & Whitney Canada
• Rolls-Royce
• Safran Group
• United Technologies Group

Advanced aerospace valves can help commercial airliner manufacturers achieve a

15%+

increase in overall airframe and engine efficiency
Increasing efficiency doesn’t start and stop with the engine

While we are best known for the significant advances we have made in engine valves, our products meet design and performance challenges throughout an aircraft.

From anti-icing to turbine case cooling, we help customers achieve significant improvements in operational efficiency as they re-examine and refine critical systems to take advantage of the latest breakthroughs in design, materials and manufacturing.

We achieve this through the diversity of our product range, which gives our customers a very high degree of design flexibility. Our valves can be configured to use all actuation methods and media including electric motor drives, fuel and pneumatic or hydraulic actuators.

Delivering exceptional reliability under extreme conditions

Meggitt Control Systems helps operators increase aircraft efficiency while lowering operating costs with valves that deliver consistent, reliable performance under the most extreme environmental conditions.

Putting our products to the test

Meggitt Control Systems has recently completed a multi-million dollar upgrade at our state-of-the-art pneumatic testing facility in North Hollywood, California.

Improvements include a flow capacity of 300 ppm at 300 psig, enabling our engineers to conduct development testing on high-flow pneumatic systems. For extreme temperature testing, we can subject components to flowing air at up to 1200°F (649°C).

Meggitt Control Systems’ extreme testing ensures our products deliver a high-cycle mean-time-between-failure that exceeds customer expectations.

Smarter parts. Smarter solutions.

We increase performance and reliability by developing smarter valves featuring internal digital controllers and all-electric actuation systems.

These new-generation products enable engineers to use a simple laptop computer to optimize a unit’s operational parameters during development, matching the performance goals of the engine or system in which they are installed.

Meggitt Control Systems is at the forefront of built-in health monitoring. This enables valves to compensate for unusual wear patterns and performance drift, alerting the operator’s maintenance technicians to abnormal conditions and avoiding unplanned shutdowns and flight cancellations.

By reducing the number of parts, we aim to deliver up to three times more trouble-free cycles than conventional pneumatic devices.
Innovating today to meet tomorrow’s challenges

Major engine and airframe manufacturers are working to achieve a 15%+ increase in the overall efficiency of their next-generation airliners.

To meet this ambitious goal, they rely on engine and systems suppliers to introduce enabling technologies.

To provide the foundation for these revolutionary product advances, Meggitt Control Systems is developing and delivering valves with new design features and materials.


A major aero-engine manufacturer contracted Meggitt Control Systems as an alternative supplier for a pneumatic valve. After examining the original part’s design, our engineers found inherent flaws. It was prone to excessive leakage and seized up at high temperatures.

While the engine manufacturer directed our team to continue to work on this design, our engineers were convinced there was a better solution. Working independently, we designed and manufactured an alternative valve using new materials and floating high-temperature seals.

After subjecting the new design to over 250,000 high-temperature cycles, it met all the manufacturer’s requirements, while demonstrating a fraction of the established part’s problem with leakage and friction.

After reviewing the test data, the engine manufacturer selected the Meggitt design as the standard for this engine and is now working with us to transfer the technology to another new engine design.

Creating a better buffer air valve

Working closely with a major engine manufacturer, our engineers were tasked with creating a new turbobfan buffer air valve to replace the current architecture—two current valves and two solenoid controllers—with a single unit. The new design would push the boundaries of high-temperature valve technology.

After working closely with the customer’s engineers on several design iterations, the teams were successful in meeting the demanding performance and delivery requirements.

The newly designed buffer air valve incorporated multiple components, while providing better overall performance.

The engine manufacturer has since awarded Meggitt Control Systems contracts for two more new-generation valve designs.

Lowering parts count while increasing reliability

A major engine manufacturer wanted to improve the efficiency of the high-and low-pressure stage compressor on one of its larger engines. The dual butterfly valves used on the high-pressure turbine active clearance control (HPTACC) valve needed to be replaced with a more efficient and more reliable product.

Meggitt’s engineering team proposed a revolutionary new ball valve design that met the original equipment manufacturer’s requirements and delivered extra performance, reliability and cost advantages.

- Introduced a proprietary plasma spray coating—wear-resistant to 1200ºF (649º C)
- Reduced cost by 33%
- Reduced parts count by over 35%
- Reduced unit weight by 3 lbs

By working closely with the engine manufacturer, Meggitt’s team has developed a continuous improvement program for the engine’s piston and seals, increasing component life expectancy four-fold.
Hundreds of products. One proven valve supplier.

Our teams routinely deliver innovative and cost-effective solutions to problems our customers—or their current suppliers—believe are impossible to overcome.

Our strong, and long-lasting relationships are built on working closely with our customers to develop realistic solutions. However, success is based on more than just solving a problem. We align our delivery schedules with customers’ production needs and back those products with the highest level of product support.

Our range of specialized aerospace valves is diverse.

- Anti-ice (shut-off or regulation)
- Solenoid
- Engine bleed air
- Engine surge protection
- Flow control and ventilation
- APU bleed air control
- Turbine blade tip clearance control
- Pressure regulation
- Temperature control
- Transient bleed
- Sump seal pressurization
- Starter air
- Check valves
- Air/oil separators

**Butterfly**

- High reliability – contamination-tolerant designs
- Sized to suit flow—typically 1” to 6”
- Temperature capability: -65°F to +1100°F (-54°C to +593°C)
- Modulating, regulating or shut-off designs
- Steel, aluminum, titanium or ni alloy
- Actuated by air, fuel, or DC motor
- Integral positional feedback via switches, sensors or LVDT

**Ball valves**

- High reliability – contamination-tolerant designs for high-cycle endurance and low leakage
- Sized to suit flow required—typically 0.75” to 3”
- Temperature capability: -65°F to +1100°F (-54°C to +593°C)
- Modulating, regulating or shut-off designs
- Steel, aluminum, titanium or ni alloy
- Actuated by air, fuel, or DC motor
- Integral positional feedback via switches, sensors or LVDT
Servo solenoid
• High reliability solenoid servo valves
• Commanded by EEC signal
• Single valve or multi-gang manifold designs
• Can be integrated into main control valve or stand-alone remote units
• Temperature capability: -65°F to +430°F (-54°C to +220°C)
• Typical supply voltage from 10 to 32 V
• Steel or aluminum valve bodies
• Single-stage pilot valves or two-stage arrangements for greater flow

Compressor-handling bleed
• High mass flow, fast-acting pressure relief valves for IP and HP compressor stages
• Help to manage compressor surge and start-up safely
• Sized to suit flow—typically 1” to 12”
• Pneumatically commanded by remote solenoid or servo valve
• Temperature capability: -65°F to +1100°F (-54°C to +593°C)
• Integral noise attenuation features
• Steel, aluminum or ni alloy valve bodies

Sleeve and poppet
• Compact, cost-effective solution, often used where the envelope is limited
• Sized to suit flow—typically 0.5” to 2.5”
• Temperature capability: -65°F to +1100°F (-54°C to +593°C)
• Pressure-regulating or shut-off designs
• Steel, aluminum, titanium or ni alloy
• On-board or remote solenoids used for valve command
• Integral positional feedback via pressure switches

Motor-actuated
• Featuring DC motor actuation systems
• Commonly used with butterfly or ball valve elements
• Sized to suit flow required
• Temperature capability: -65°F to +350°F (-54°C to +177°C)
• Flow-modulating, pressure-regulating or shut-off designs
• Steel, aluminum, titanium or ni alloy
• May include integral controllers for smarter control of valve function
• Position and health monitoring feedback capabilities

Fuel-actuated
• Fuel-draulic actuation systems
• Safe, high reliability pedigree designs
• Commonly used with butterfly or ball valve elements
• May include integral transducers for accurate positional feedback
• Sized to suit flow required
• Temperature capability: -65°F to +480°F (-54°C to +250°C)
• Typically used for flow modulating applications
• Steel, aluminum, titanium or ni alloy

Passive
• Wide range of proven designs demonstrating extreme reliability
• Check valves
• Shuttle valves
• Compressor start-up valves
• Passive regulators
• Source-switching valves
• Produced in a range of materials and valve designs to suit temperature and operating requirements
About Meggitt

The Meggitt group, with a workforce of 9,600 over 40 operating sites worldwide, specializes in smart engineering for extreme environments—high performance components and sub-systems for aerospace and defense markets. Its sensing and control technologies are also deployed in land and marine-based gas turbines, oil and gas applications and the medical, mainstream industrial, test engineering and transportation sectors. The group is managed via five divisions.

**Meggitt Aircraft Braking Systems** is the number one producer of wheels, brakes and brake control systems for regional, commercial transports and business jets and military aircraft, with products on an active fleet of over 30,000. Its capabilities include helicopter rotor brakes and brake temperature monitoring.

**Meggitt Control Systems** is a leading supplier of aerospace valves, heat exchangers, environmental control systems, high performance electro-mechanical fans, motors, compressors, controllers and specialist pumps and industrial fuel and bleed air control valves and ground fueling products.

**Meggitt Polymers & Composites** designs and develops aircraft seals, flexible fuel tanks and coatings, complex composite structures, smart ice protection systems and sub-assemblies and interior panels and accessories.

**Meggitt Sensing Systems** excels in high performance sensing and monitoring systems for applications in aerospace, energy, industrial and laboratory test.

**The Meggitt Equipment Group** was created to enable a set of smaller capabilities market their offerings to specialist customers, while benefiting from the wider Meggitt group’s investment in shared services and common processes. Its capabilities include training systems (live and virtual fire) and combat support (ammunition-handling, military electronics cooling and countermeasure launch and recovery systems), avionics, automotive and industrial control electronics, unique heat transfer equipment for hydrocarbon processing and aircraft fire protection and control.

In April 2011, Pacific Scientific Aerospace joined the division, creating a comprehensive ATA 26 fire protection system in-house and expanding the group’s capability in more electric technologies (motion control, power conversion, high-density magnetics, power sensors, interconnects and harnesses and next generation lithium batteries), electro-mechanical linear motion control and the latest in aircraft security tools.

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**www.meggitt.com**

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