POLYMER SOLUTIONS
SPACE IS OUR FRONTIER

An aircraft is not a sculpture. It's a component assembly, transformed into a continuous flow of materials using Meggitt's polymer solutions.

We seal essential spaces, created by essential equipment, such as landing gear, wings, engines, nacelles, windows and doors. Our products are flexible enough to perform, yet rigid enough to maintain structural integrity.

And we separate essential spaces. Our products stop fire spreading between engine zones, ensure bleed air does not bleed and hydraulics do not leak, minimising component contamination and optimising the performance of the aircraft systems they serve.

We have around 10,000 designs on our books for aerodynamic surfaces, engines and nacelles and air and fluid handling, with around 7,000 a year in series production, each one meticulously made by hand using modern, modular manufacturing techniques within strongly managed programmes.

While some of our seal-making processes can be standardised, it's our operators' manual dexterity and personal commitment to quality that really counts – an ethos promoted strongly across our European, North American and Chinese operations.

Aerodynamic surfaces | Engines and nacelles | Air and fluid handling

AEROSPACE
CAPABILITIES

Wheels, brakes and brake control
Thermal management and fluid control
Ice protection
Smart electronic control
Fire protection and control
Ignition
Health monitoring
Sensing and data acquisition
Flight test
Fluid gauging
Air data measurement
Flight displays
Polymer solutions
Fuel containment
Countermeasure deployment
Automatic ammunition-handling

MEGGITT
smart engineering for extreme environments

WHAT SETS US APART

Making things safer
Our specialist seals prevent fire spreading between engine zones, withstanding up to 1100ºC for about 15 minutes – time enough for extinguishers to do their work.

Making things quicker
Our redesigned new product introduction process and enhanced programme management skills mean we can deliver the most complex products quickly – like the Boeing 777 cargo door seal, which took 18 weeks, six weeks earlier than the norm for a seal measuring three by three metres square, with a small and variable cross-section. It fitted perfectly and worked first time.

Making things simpler
We cast the core of selected seals in wax to minimise joints on unwieldy shapes, leaving a robust structure intact after the core has melted away after curing.

Making things lighter
Chemistry contributes to our solutions that deliver savings. Our latest compound is enabling us to reduce silicone density by up to 20%, saving around 100 kilograms on a typical commercial aircraft's usage of a half tonne of elastomer throughout its structure.

Making things stronger
To improve aerodynamic performance, airframe designers are looking for bigger movements in larger wing structures, which means bigger gaps. Our seals are flexible enough to perform within these spaces, yet rigid enough to maintain aerodynamic efficiency, which is why they have been specified on the trailing edges of the wings of the A380 and Boeing's Dreamliner.

Making things better
Our engineers work with their customer counterparts so we understand each others' constraints and opportunities. Early involvement means we can optimise and form the structure of any part. We can join one to another, minimally yet safely. Working with generic tools is second nature to us and Lean manufacturing pervades our operations.

KEY PRODUCTS

AERODYNAMIC SURFACE SEALING

Doors
- Passenger entry
- Cargo
- Access
- Landing gear

These aerodynamic pressure seals prevent water ingress with an allowable air leakage rate.

- In standard or low temperature-tolerant silicone
- With low friction toppings to reduce wear in frequent or excessive movement areas
- Reinforced with fabric or fibre board to maintain aerodynamic profile under pressure
- In a blade or, for pressure maintenance and water ingress prevention, a blade-and bulb configuration or inflatable seal

Wings and other structures
Our aerodynamic seal designs reduce parasitic drag, optimising performance at cruise condition and avoiding clashes with moving parts.
- slats
- flap track fairing ailerons
- spoilers
- rudder gap and elevator
- radome
- windows
- helicopters, doors, cockpits and rotor bellows

- In standard or low temperature silicone
- With low friction toppings to reduce wear in areas of frequent or excessive movement
- With fabric or composite fibre reinforcement to maintain aerodynamic profile under pressure
- In blade or, for more contact with the mating face, blade-and-bulb configurations
- Attachments include retaining plates

ENGINE AND NACELLE FIRE SEALS

- Upper/lower bifurcation
- Breather mast/drains mast
- Thrust reverser doors
- Air-cooled oil cooler
- Fan case torque box
- Fan/inlet cowl
- Exhaust nozzles

AIR AND FLUID HANDLING

- High pressure ducting
  - flexible
  - rigid composite
- Joining bellows, sleeves
- Gasper manifolds
- Lightweight air/oxygen hose
- Waste water hose
- Line and pipe support systems

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HOW WE WORK

Programme management

Our products are handmade but our processes are those you would find in the best car factories. We never fulfill requests for proposals without robust project schedules, underpinned by sophisticated programme management tools that define responsibilities and make reporting lines crystal clear.

Engineering

- **Finite Element Analysis (FEA)** Modelling stress, compression and actuation to reduce and optimise design iteration.

- **Rapid prototyping** Producing physical models to check they fit before creating tools.

- **Co-located engineering** So we understand our customers' constraints and opportunities and they ours. That's the secret to optimising the geometry of a part within a space envelope, using the least material possible to meet a specification and in a design that is easy to make.

- **Test** A full test capability including functional and proof pressure

Fire:	AC 20-135/ISO2685
Pressure:	13 psi to +15000 psi
Vertical/horizontal burn:	FAR 25.853
Smoke emission:	JAR/FAR 25.853
Smoke and toxic gas emission:	ABD0031
Heat release (OSU):	JAR/FAR 25.853
Endurance/cyclic testing	

Logistics

Buffer stock, vendor-managed inventory, consigned inventory or any viable logistic solution.

WHO WE WORK WITH

- Airbus
- Aircelle
- Agusta Westland
- Alenia
- Alenia Aermacchi
- BAE Systems
- Bell Helicopter
- Boeing
- Bombardier
- Boeing Australia
- EADS
- Embraer
- GKN
- Goodrich
- Gulfstream
- Hamilton Sundstrand
- Honeywell
- Lockheed Martin
- Pratt & Whitney
- Pratt & Whitney Canada
- Northrop Grumman
- Rolls-Royce
- Saab
- Spirit Aerosystems
- Vought Aircraft
- UTC

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SEALS
Just one of the Meggitt capabilities covered in Meggitt in a Minute, the group's new e-tour.

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