

AIRCRAFT HANGARS AND THEIR DOORS

for the world's aircraft - past, present and future



FULLY UKCA COMPLIANT FOR EXECUTION CLASSES 1 TO 4 • ISO 9001:2015 • ISO 14001:2015 • BS EN ISO 45001:2018 • BS EN ISO 3834-2:2005
JOHN REID & SONS (STRUCSTEEL) LTD trading as REIDsteel & REIDglazing • Company Registration No: 617773

REIDsteel

JOHN REID & SONS (STRUCSTEEL) LTD

From Blériot to the largest aircraft flying today . . .

REIDsteel Hangars & Doors

REIDsteel is a trading name of John Reid & Sons (Strucsteel) Ltd - Company Registration No: 617773

Established by Colonel John Reid in 1919, we started making the first bespoke aircraft hangars for the French aviator Louis Blériot in the 1920s.

Today REIDsteel remains a family-run and independent business, operating from our UK site in Christchurch, Dorset.

We are certified to fabricate steelwork to **CE execution classes 1 to 4** and have **ISO 9001:2008, ISO 14001:2004 BS EN ISO 45001:2018 and BS EN ISO 3834-2: 2005.**

We also have an excellent reputation for the quality and value engineering of our hangars and hangar doors, and have a patent for a 'method and apparatus for constructing buildings' which enables us to produce large span hangars very cost effectively.

What makes us unique is that we encompass everything from the design and detailing, through to fabrication, shipping and even the erection process itself.

So whatever the hangar design and wherever the location, our experienced team can help. The earlier you involve us the quicker you'll have your hangar up and ready to use.

This brochure showcases a few of the hundreds of hangars we have created. For more information about REIDsteel or any of our products visit: **www.reidsteel.com**

As part of REIDsteel's Aircraft Hangar service we can supply:

aircraft hangars

hangar doors

vehicle doors

personnel doors

mezzanine floors, walkways and staircases

cranes

cladding & transluents

gutters and downpipes

ridge vents and louvres

roof safety system

curtain walling, glazing and brise soleil

The complete building envelope from one supplier.





89 metre clear span hangar with extensive office and maintenance facilities at Biggin Hill Airport, Kent UK

Built for Rizon Jet, this FBO and maintenance facility focuses on travel for senior executives, high-ranking government officials and professionals.

The 4300m² hangar has an 89m door width consisting of six 14.9m x 9.6m electrically powered doors, which can be operated independently.

The hangar is also served by two 2T overhead travelling cranes, which run the whole length of the 90 metre building.

A striking visual feature is the natural light in the two storey office areas, made possible by curtain walling running the whole of one end of the building.

All the steelwork, hangar doors, cladding, glazing and curtain walling was designed, made and installed by REIDsteel.



Above: From design to completion. Six slab, three track doors allow 58 metres to be opened left, right or centre at any one time.

Left: REIDsteel arrival & departure doors for the FBO lounge.



120 metre wide hangar with tailgate at Biggin Hill Airport, UK

The brief required a 120m wide hangar, split into three areas, two of which had to be accessible simultaneously, with a maximum height of 15m and one span designed to house a Boeing Business Jet (BBJ).

Biggin Hill Airport Ltd chose the successful partnership of Civils Contracting Ltd and REIDsteel to fulfil this brief. For our unique solution the hangar door has nine slabs and three tracks with a tailgate door. Three slabs are designed to jump the gap dictated by the BBJ requirement and the remaining two spans are high enough at 9.2m tall to allow the entry of the more usual type of business jet.

These hangar doors are sheeted in microrib profile composite panels manufactured by Kingspan, and they include personnel doors which have no threshold to them. The Hangar also features a service door for towing trucks or deliveries.

The 4.3m tall tailgate opening takes the available height to 13.5m. Innovative engineering allows the slabs to 'jump' the 3m gap created in the top track by the tailgate opening. Most of the weight of the doors is borne by the bottom rolling track. The top track supplies stability and the power to the door motors and controls.



72 metre span hangar for Fayair, Stansted Airport, UK

Following the acquisition of a strategically located plot at Stansted Airport by Fayair; REIDsteel, together with a team consisting of LPL Construction Services, Pascall and Watson Architects and E+M Tecnica (among others), set about designing an aircraft hangar with ancillary accommodation for this prestigious client.

Reidsteel designed, supplied and erected all structural steelwork, cladding, glazing and external doors, plus the six slab, three track, electrically operated, sliding slab hangar doors.

The hangar building used our tried and tested V-braced tied portal framework and consisted of an insulated double skin cladding system on the roof and walls, with fire rated composite panels affording protection at the main partition walls between the hangar and the ancillary accommodation facility.



The walls of the ancillary accommodation are clad with horizontally laid composite panels in two stylish colours and with ventilation louvres colour matched to suit.

Key to the swift delivery of the building into the hands of the client was good, safe and considerate onsite coordination to enable each trade to undertake their element of the works as efficiently as possible. The level of commitment from all parties was paramount to the successful completion of the project and the end result demonstrates the degree of attention to detail that was administered in every aspect.

76 metre span maintenance hangar for UPS Courier Services, Shannon Airport, Co Claire Eire

5700m² maintenance hangar at Shannon for Aer Rianta to keep the world renowned UPS Courier Services airborne and carrying cargo to all parts of the globe.

The customer specified the use of a lifting fabric type Megadoor, 76 metres wide by 20 metres high. We also made the structure

for the administration building on the side of the hangar, including all the curtain walling, windows, glazing and entrance doors.



88 metre clear span TEC International hangar for the Presidential Flight in Malabo, Equatorial Guinea



Outriggers allow for clear span door openings.



TEC is a private company operating in Equatorial Guinea, Chad and Cameroon run by a resourceful Frenchman, Monsieur Bernard Queyroix.

When the President of Equatorial Guinea wanted a big hangar (88m x 90m x 20m) for the Presidential Flight in Malabo, Monsieur Queyroix came to us. He was amazed by the quick reaction, our can-do attitude and speed of shipment and erection. The client required a decorative fascia which featured non supportive steelwork sitting proud of the cladding.



Our erection supervisors were responsible for the erection team and commissioning of the eight 17 metre high by 11 metre wide electro mechanical doors.

55 metre span hangar for the Royal Air Force, Valley Airport, Anglesey UK

This 55 metre span, 155 metre long hangar houses the latest generation of Hawk trainers for use by the RAF, Royal Navy and Army Air Corps.



We also designed and constructed the Squadron Building containing two simulators, classrooms, gym and changing facilities.

The main contractor was Morgan Ashurst and the client was VT Aerospace.

37 metre span hangar for the Royal Naval Air Station Culdrose, Helston, Cornwall UK

This 2000m² hangar was built to house the Royal Navy's new Merlin search and rescue helicopter. It took only twenty five weeks to design, make and erect in spite of high winds and generally wet conditions.

The hangar has two sets of six leaf Cascade type rolling doors made by us, one set at each end, with outriggers to allow full width access. The doors are each driven through a cable and gearbox mechanism turned by one large handle, so the slabs all operate together.





280 metre wide Airbus & Boeing maintenance hangar for Lufthansa Technik, Malta

Lufthansa Technik Malta specialises in the maintenance and repair of Airbus, Boeing and other large aircraft. The hangar is 280 metres wide in three clear spans of 91.5 metres.

We have recently completed an extension for this hangar (see opposite), but the original build was 90 metres deep with a clear height of 26 metres under all the steelwork. The hangar is fronted with eighteen electrically operated door leaves, the largest of which are 26 metres high by 15 metres wide.

The facility can accommodate two Airbus A380s and many narrow body aircraft simultaneously as well as having a number of workshops within it.

In addition to Lufthansa and Air Malta aircraft, customers include: Spanair, AirOne, BMI, Germanwings, Fly Niki, Privat Air, Arik Air, Wizz Air, SunExpress and Livingston Energy Flight.



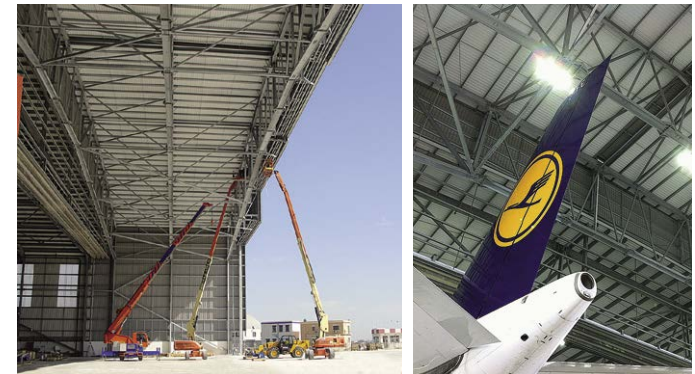
The door slabs are 26m high and over 15m wide.



Hangar extension for Lufthansa Technik, Malta

In order to accommodate larger aircraft in the smallest of its three maintenance hangars, Lufthansa Technik asked REIDsteel to design a 20m deep extension with a height of 20m under the central door head of this 90m span hangar.

The REIDsteel design team worked under the constraint that this new extension was to be constructed on top of the existing apron which could only accept shallow excavations. This led REIDsteel to recommend that an electrically operated fabric curtain door from Megadoor be used - a five curtain design which, when raised, produced clear heights of 20m in the centre section, dropping to 18.5m and then 15m in the outer sections.



This angle shows the depth of the extension and extra internal height that provides enough clearance for the tailplane.

Steelwork and cladding was designed, supplied and erected by REIDsteel and the end result is a very neat and hugely accommodating extension that incorporates translucent door fabric to allow diffused daylight into the hangar. A wall mounted louvre/ridge-vent combination helps to provide a comfortable and productive working environment.

6900m² helicopter maintenance facility

for Summit Aviation at Manston Airport, Kent UK



This helicopter maintenance facility consists of a 52 metres by 115 metres main

hangar and a reception area 22 metres by 42 metres. The curved roof consists of standard trapezoidal cladding and the waveform roof over the reception area is in colour matched aluminium standing seam.

The wall cladding is a mixture of box profile double skin and microrib profile composite panels in Sargasso Blue and Metallic Silver. The main contractor was GSE Design & Build.



950m² helicopter hangar

with maintenance with built in office area



This UK hangar was designed & erected by REIDsteel and featured our hangar doors, cladding, windows and personnel doors.

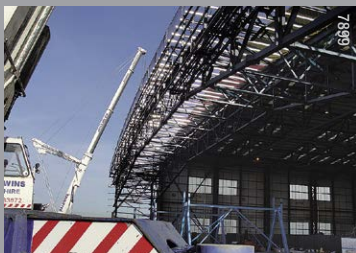


25 metre helicopter hangar at Nouakchott in Mauritania, North West Africa

The hangar is 7 metres high with a lean-to on either side, together with cantilevered upper tracks on each side of the doorway so that the manual doors can be rolled back to give maximum clear entry of 25 metres.

The hangar doors, cladding, windows and personnel doors were also designed and made by us and we supplied a 2 tonne EOT crane as well as incorporating crane beams and rails into the steelwork.





100 metre span hangar extension and door at Bournemouth Airport, UK

This extension to the existing Hangar 12 at Bournemouth Airport has a clear span of 100m, is 12m deep and 22m high to the eaves.

Once the pre-assembly work had been carried out, the 140T truss was lifted into position, using a 500T and a 1000T crane. Taking advantage of a perfectly still day, and with the help of our suppliers, Civils and Bournemouth International Airport, we were given the green light to go ahead with the lift, which was witnessed by our designer, Richard Callaghan and draughtsman, Steve Roberts.

Once all the steelwork and cladding was completed the Megadoor was installed.

Hangar extension for KLM, Norwich International Airport, UK



KLM UK Engineering who specialise in the maintenance, repair and overhaul of aircraft, have their main base at Norwich International Airport. Due to existing and new contracts KLM were in need of more space and decided to refurbish a disused hangar which included a 10 metre hangar extension supplied and erected by REIDsteel.

The electrically operated Megadoor is split into three leaves, separated by swing-up columns, which allows a full width of 45 metres. The outer leaves are 9 metres high; the centre 13 metres. For flexibility the door leaves can be individually opened and a row of vision panels allows daylight to illuminate the hangar interior. The hangar can now house a Boeing 737.



80 metre span hangar for servicing a fleet of Boeing 747 series freighters for Polar Air at Prestwick International Airport



We designed, fabricated and erected the complete structure using our patented segmental tied portal concept. Design, fabrication and erection took just twenty six weeks. REIDsteel also designed and made the electro-mechanical doors complete with outriggers to allow full width opening.

A safety feature is the permanent all round roof protection for use during construction and for future maintenance. As with all our work we ensured that Health and Safety and CDM Regulations were met during construction and for the design life of the structure.



Permanent roof edge protection system with walkable gutters for workers both during construction and for future inspection and maintenance.



32 metre clear span hangar for Malta Aircraft Museum

We built this beautiful little hangar for the Malta Aircraft Museum in 2005. The style had to reflect the era of the Second World War and houses a Supermarine Spitfire, a Hawker Hurricane and period anti aircraft guns as well as other WW2 memorabilia.

Malta, the George Cross Island, is rightly proud of its steadfast resistance to the fascist tyranny that swept across Europe during the 1930s and 40s.





Hangars doors clad in horizontally laid microrib composite panels to give a clean appearance on the inside.



New T2 hangar door & extension to house two new aircraft, Biggin Hill Airport, UK



In order to house a BAe 146 with a 26.2 metre wing span and a Dassault Falcon 900 with a 19.3 metre wing span, new doors and an extension were required for the T2 hangar at Biggin Hill Airport.

The new doors have six slabs on three tracks, giving an entrance 30 metres wide by 9.25 metres high. These doors are all electrically operated with a fail-safe system which allows each door slab independent movement via a hand held control pendant. The system also allows manual operation when required.

The doors are insulated with horizontally laid microrib composite panel cladding complete with preformed corners. The door hood steel frame was erected independently from the existing hangar steel frame. We erected the steel, fitted the cladding and wired and commissioned the electrically operated doors whilst maintaining access into the hangar for plant etc.

945m² hangar for Newcastle Aviation Academy, UK

We designed, fabricated and erected this hangar in conjunction with the civil contractor Morgan Ashurst. The building has extensive facilities, including a three storey accommodation wing, classrooms, workshops and a canteen.



The 33 metres by 7.7 metre high hangar door was also made and installed by us. It is made up of two steel framed and clad slabs driven by hand gears on two tracks.

90 metre span hangar

for Inflite Limited – Stansted Airport, UK



This maintenance hangar is 90 metres clear span, 48.8 metres long with a 13.7 metre clear height. Its six, 15 metre wide, door leaves are electrically operated giving a clear opening of 60 metres and are clad in horizontally laid composite panels complete with preformed corners.

The roof is fitted with permanent edge protection to protect workers during construction and for future maintenance.

The rear elevation has a two storey lean-to ancillary building.

80 metre wide helicopter hangar

for Scatsta Airport, Shetland Isles, UK

Shetland Leasing & Property Company (SLAP) called us in to design and build a hangar to house and maintain their helicopters servicing North Sea oil platforms. This facility has greatly enhanced the working conditions, allowing maintenance engineers to provide a much better service. The hangar is a two span propped portal frame building measuring 80 metres x 41 metres with a 7.5 metre clear height. Its manually operated doors are clad in vertically laid composite panels.

The rear elevation has a full gable frame to permit future end extension. Note the permanent all round roof edge protection to enable the client to maintain the building safely. The structure resists the howling winds blowing straight off the sea.



132 metre wide hangar for Emirate Airlines at Dubai International Airport

designed to accommodate two Airbus A320-200's

This hangar has two 66 metre spans with a clear entry height of 20 metres. The whole structure was designed, made and shipped by us in only eight weeks and erected by local engineers in record time.



We also designed, made and shipped the 1300 tonne structure for the Air Cargo Terminal at Dubai in twelve weeks, this was also erected in record time.

80 metre span hangar

for British Aerospace (now part of BAe Systems), Hatfield UK



This precision built hangar for assembling BAe 146 'Whispering Jet' airliners contained sophisticated equipment such as four 3.2 tonne overhead travelling cranes with rails levelled by laser beam to fine limits. A constant temperature heating plant and a fire protection system were built in.

The hangar had an overall height of 20 metres allowing 13.5 metres clearance under the cranes. The structure also incorporated a structurally independent annexe with design and administration offices and stores. The electrically operated doors, with built in personnel doors and patent glazing, were fully insulated and had anemometer controlled cut-outs to prevent opening in high winds.



68 metre span hangar

for Aer Rianta PLC
at Shannon International
Airport, Eire

This hangar for the European Airbus A330 has a 20m clear height to tailgate top with electro-mechanical doors and a remotely operated tailgate door made by us.

Permanent roof edge protection and access was designed into the structure to protect workers both during construction and for future inspection and maintenance.

We also designed and made a full span protected walkway at upper track level to install and align the upper door guides and electrical pick-up track. The walkway will also be available for future inspection or maintenance.

As usual full Health & Safety and CDM Regulations were met during construction.



85 metre clear span hangar

for Monarch Aircraft
Engineering, Manchester
International Airport, UK

Used for the maintenance of airliners up to 747-400 size, we designed, made, erected and clad the complete structure, including the electrically operated doors, the two storey office at the side as well as making and fitting the double glazed aluminium windows for the offices and main doors.



Unusual doors open all to one side, having to 'jump the gap' where the tailgate entry interrupts the upper door track and conductor power rails.



Three 42 metre span hangars

two for the Chilean Air Force at Fuerza Aerea del Chile, Santiago and one for the Chilean Navy at Vina del Mar, Chile



2300m² hangars designed and made for the Chilean Air Force, incorporating two storey offices, workshops and stores on three sides.

At the rear, to accommodate the aircraft nose, there is a specially built extension complete with door to allow exit and entry of tow vehicles. The complete erection and cladding was undertaken by a local construction company under the supervision of our engineer.

The hangar for the Chilean Navy at Concon was specially constructed to house and maintain the Orion P-3 turbo-prop long range aircraft that patrol Chile's long Pacific coastline.



85 metre clear span hangar

with clear entry height of 19.8m for FR Aviation, Bournemouth International Airport, UK



This hangar, big enough to take most aircraft flying today, was designed, fabricated and erected by us. We also did all the civil work, including foundations, floor slabs and apron.

It is used by FR Aviation in association with sister company Flight Refuelling Ltd (now known as Cobham PLC, who pioneered inflight refuelling) to convert big commercial jets into fuel carrying tankers.



42 metre hangar door & housing for Inflite Ltd, Southend, UK

Inflite Ltd wanted to increase the size of the hangar doors to enable larger aircraft to be maintained and repaired within the hangar. We designed, supplied and erected the steelwork and insulated cladding for the door housing as well as the hangar door itself.

The door housing is 42 metres wide, 2 metres long and 12.5 metres high to offer clear door truss height to suit a 11.85 metre door.

The hangar doors have six slabs on three tracks, giving an entrance 38 metres wide, each door slab being electrically operated. There are also 4.5 metre outriggers on either side.



50 metre span MRO hangar with fuselage sealing doors for Eznis Airways, Ulaanbaatar, Mongolia



Designed for a fleet of two Avro RJ85 and four Saab 340B aircraft, this is a 50m clear span hangar with two storey office, stores and workshops on three sides.

REIDsteel fabricated, designed, and shipped all the steelwork which, with the cladding and essential insulation material, filled more than twenty shipping containers. We also supplied the large Eznis company logo which features on the front and back of the hangar, and supervised all the hangar erection and construction before the winter set in.

The centre two door leaves feature an inflatable fuselage sealing ring hidden behind two smaller outer doors. With these

two smaller doors open the nose of an Avro RJ85 aircraft can be inserted so that it can be worked on from inside the hangar with the majority of the aircraft remaining outside.

The inflatable seals are a bespoke design for the aircraft to ensure a perfect seal against the weather . . . and what weather it is . . . Summer temperatures in Ulaanbaatar can go as high as +40°C, but during the Winter they can drop to as low as -40°C!

Signature Flight Support Hangar Luton Airport, UK



This 105m clear span hangar is 44m deep. The doors

were originally configured 9m high with a restrictive tailgate door which impact greatly on the structural design - REIDsteel suggested an increased door height in order to accommodate a BBJ anywhere within the hangar. This greatly simplified the design of the steelwork leading to significant savings in the structure to the benefit of the client. With the help of SFS' architect, 3DReid, the design intent was not compromised and this simple change to the doors could be implemented.

With the erection of the hangar moving into the winter months, the main contractor, John Sisk & Sons, proposed a change to the cladding system to enable the building to be lined in earlier than would have been the case. This simple, inspired change allowed follow on trades to carry out their works much earlier and - despite some of the worst winter weather experienced in many years - enabled handover to the client only four weeks after REIDsteel's completion.



Interior view of one of our door systems, consisting of four independently driven door leaves; three are glazed.

Hangar Doors are the most used and therefore the most important part of an aircraft hangar

In our standard bottom rolling design each door leaf has its own motor, independently driving the ground wheels via a reduction gearbox. Each leaf has a fail safe opening and closure system which is controlled by two handheld pendants so that the operator is well clear, ahead of the leading edge of the door leaf.

Electro-mechanical brakes are applied automatically; if the operator should let go of the pendant or fall over, the door leaf would immediately stop. The door leaves are of steel framed bolted construction and clad in materials similar to the wall cladding of the hangar, single skin or insulated.

The vertical top rollers, two on each door leaf, have sealed radial bearings and run between two steel guide rails. Power is fed to each door leaf from an overhead enclosed conductor rail via a collector trolley.

In the event of an electrical failure the door leaves can be declutched and pushed manually or towed because the low friction sealed ball-bearing system



in the ground-wheel hubs makes them easy to move.

Manually operated doors have leaves that are designed to be pushed, moved with a turning handle, or towed. They are also strongly recommended where the electrical supply is unreliable; our doors open and close so easily that power is a luxury rather than a necessity.

Our doors can also be set up as a cascade system whereby a set of doors are connected so that a 'master' door leaf is the controller and the other leaves in the set all move together at varying but proportional speeds.

1 - The handheld control pendant provides a fail safe method of opening and closing powered doors. To the left of the handle is the brush seal.

2 - Ground tracks are laser levelled before being concreted into position. The door leaves have double flanged ground wheels which run on the steel tracks.

Fabric Hangar Doors



Fabric doors can be used where there is no space for outriggers, but the whole hangar width needs to be open at the same time.

The door slides up and down in weather-sealed vertical guides, which are attached to the hangar structure. The bottom section is lifted upwards and the fabric folds into pleats.

Once the fabric sections are fully raised the vertical guides swing up into the door head to leave clear access to the full width of the hangar.

Top Hung Doors

The weight of these doors is carried on rails suspended from the structure above the door - so these doors need to be small, or the structure needs to be very stiff to avoid deflection.



Sliding Folding Doors

These are a useful alternative to fabric doors on very small hangars. We can supply doors to your own individual specifications.



*Flying Services Hangar – Sandown I.O.W
incorporating an air training school, a good
example of a sliding folding shutter door.*

Passenger, Workforce & Vehicle Doors



REIDSteel can supply and install a variety of different industrial doors and architectural doors for a range of uses.

Arrival & Departure Doors • including architecturally striking curtain walling and accompanying doors such as manual swing doors and auto-biparting, auto-telescopic or auto-revolving doors.

Personnel/Emergency Exits • Our thresholdless personnel/emergency exit doors can be incorporated within our bottom rolling hangar doors. There is no bottom beam to jump over making them much safer and classed as fire escape doors by Building Regulations.

Vehicle Doors • We can supply doors suitable for tugs or deliveries. Our roller shutter doors and insulated sectional overhead doors can be incorporated into the leaves of the hangar doors if the leaves are 12m or greater in width.

For more information about REIDSteel Hangar Doors visit our website: www.hangardoors.com



This 280 metre wide hangar has eighteen door slabs with the largest being 26 metres high by 15 metres wide (each slab weighs 16 tonnes), all electrically operated and clad in single skin sheeting with windows, louvres and threshold-less personnel doors.

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Visit our dedicated website: www.aircraft-hangars.com

REIDsteel are experts in the design, fabrication and construction of:

Aircraft hangars, hangar doors and hangar extensions

Bridges

Car parks

Church and community buildings

Cranes

Environmental structures

Grandstands and stadia

Housing, hospitals and schools

Hurricane and earthquake resistant buildings

Industrial and warehouse buildings

Leisure and sports buildings

Office buildings, commercial buildings and retail superstores

Security gates, barriers and defensive structures

REIDsteel

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G2	a