

Airport Products

Solutions for Airport Noise
and Ground Testing



making the world a quieter place

iac acoustics

Founded on an unrivalled history of engineering with some of the most pioneering discoveries in the industry, the IAC Acoustics brand is synonymous with technological innovation.

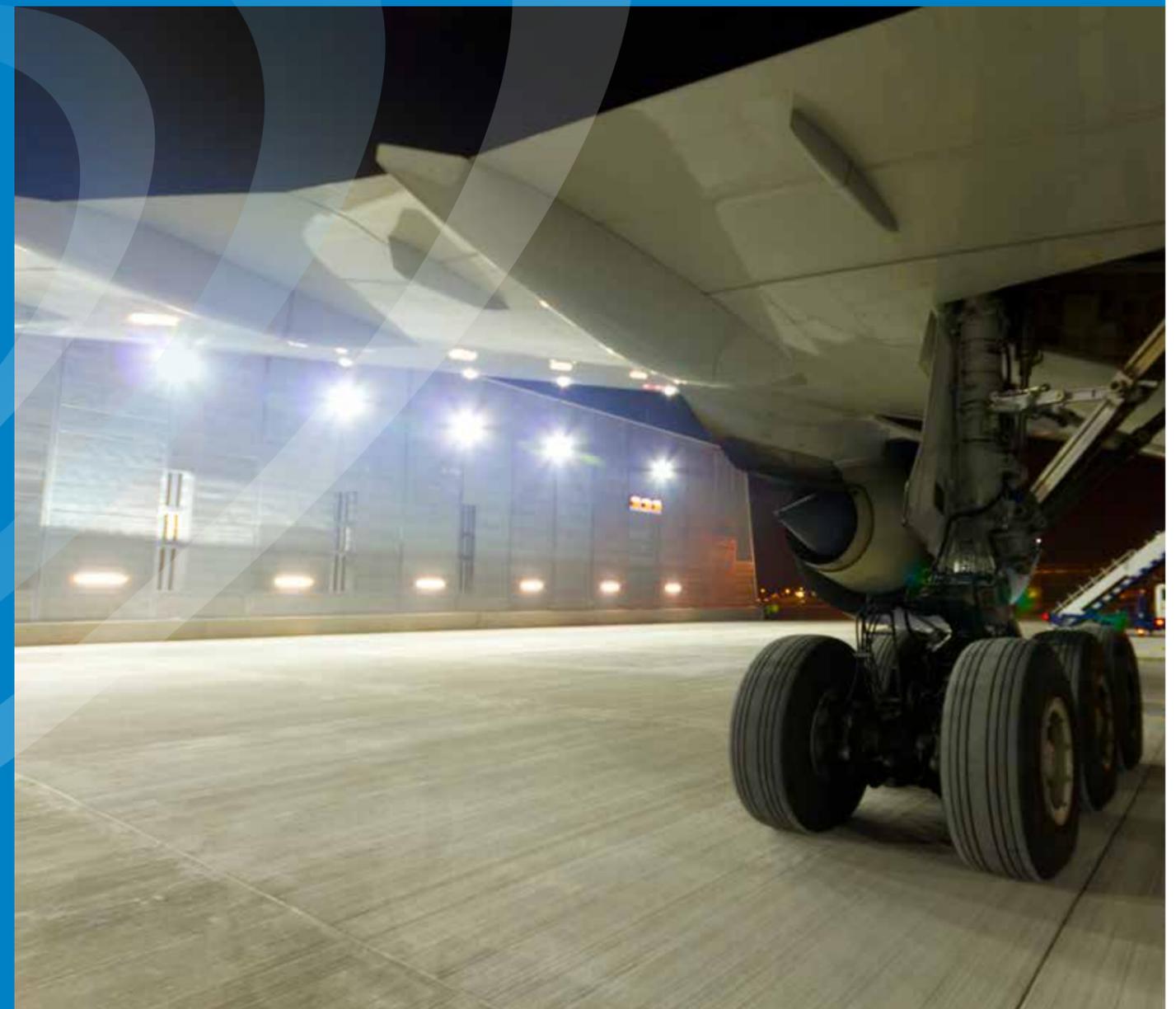
From controlling noise at a power station to tuning the sound in a TV or radio studio, IAC Acoustics has had a positive impact on society and helped to shape what can be achieved to make the world a quieter place.

The continual success of our products and services over the decades has brought the brand a reputation for quality and reliability among customers, whether they are multinational corporations or independent family businesses. This is supported by the expertise and passion of our workforce, the people behind the products, including designers, engineers and industry specialists.

Like all other IAC Acoustics products, our range of solutions tailored for the airport and aviation market have proved their performance and reliability across the world. Although no two projects are the same IAC Acoustics aims to deliver the consistent high levels of quality, efficiency and support demanded by our customers.

To face the ever increasing noise reduction demands of the future, we will strive to further enhance our ability to reduce excessive noise, not only within the aviation sector, but across our entire portfolio. We aim to focus on developing tomorrow's solution today, innovating faster and delivering solutions that

meet the requirements of the next generation. In doing so, we will stay true to our key values and founding philosophy to make the world a quieter place.



Ground Run-up Enclosures (GREs)

With a new, aerodynamically efficient design, our range of Ground Run-up Enclosures (GREs) are available for any size of commercial aircraft, including the Airbus A380. The new design evolved from over 20 years of successful history in providing aircraft testing facilities across the world.

IAC Acoustics offers a world leading solution to on-wing aircraft engine testing.

Utilising the latest aerodynamic and acoustic techniques, the ground run-up enclosure from IAC Acoustics offers market leading performance to take ground testing of aircraft to higher levels, even for the largest civil aircraft in the world: the Airbus A380.

IAC Acoustics has already delivered two A380 sized GREs and also provided solutions for military aircraft.



Jetshield™

The design of the Jetshield™ rear wall has been developed to offer extreme aerodynamic and acoustic performance. The Jetshield™ combines collector, deflector and ejector features to cleverly redirect and accelerate the thrust wake away from the facility. The air flow direction and velocities substantially reduce the possibility of re-ingestion and hence promote engine running that would previously have not been possible.

Aerowall™

The design of the Aerowall™ side walls are also specifically designed to offer extreme aerodynamic and acoustic performance. The silenced side vents mitigate the detrimental effects of crosswinds, reduce air flow

distortion and reduce vortices within the facility. These improvements enable engine running when, without the GRE, the aircraft could not normally be tested.

IAC Ground Run-up Enclosures are available for any size of aircraft, either:

- FAA Airplane Design Groups I to VI
- ICAO Reference Codes A to F

The acoustic performance can be varied to offer a solution that meets your requirements and budget.

Options include:

- Obstruction Lights
- Weather Station
- Noise shelter for staff

We can also supply ground run-up facilities for military aircraft, including afterburner capability.



Blast Deflectors & Jet Wash Screens

IAC Acoustics has a barrier for all airport and aircraft testing requirements including solid, both angled and vertical, mesh and palletised solutions. Our barriers can simply deal with jet wash, or offer noise reduction where required.

Protecting people, buildings, vehicles and other aircraft is a high priority for any airport. As airports become busier over time, the effects of jet wash and thrust become an ever increasing issue. From taxiing jet engine thrust, to full power ground testing runs, IAC Acoustics can provide a barrier system to suit your needs, allowing aircraft to freely move around an airport apron without the worry of causing harm or damage.



Our Jet Wake Barriers can be used to protect buildings, terminals, aircraft, apron, ramps, roadways and walkways from:

- Taxiway and breakaway thrust
- Power assurance checks
- Full power ground testing
- Full power afterburner 'wet' ground testing

IAC barriers are designed and constructed for long service life and aesthetic appearance, including:

- Hot dip galvanised structural steel
- Galvanised fasteners and fixings
- Anti-FoD shake proof fasteners
- Galvanised deflector sheet
- Painting in CAA approved red / white panels option

Typical sizes are 3.1m, 4.3m and 6m nominal height – others available.

Benefiting from the aerodynamic technologies utilised for our latest Jetshield™ and Aerowall™ Ground Run-up Enclosure, the latest range of barriers offer superb aerodynamic performance for various applications.

IAC Acoustics offers a variety of barrier systems:

- Solid angled
- Solid vertical
- Angled mesh
- Vertical mesh
- Deflectors
- Acoustic barrier systems

All of our taxi-breakaway thrust barriers are available as a fixed solution, but can be palletised should the need for mobility / flexibility arise.

Furthermore, our angled mesh screen barrier has been assessed via wind tunnel testing and is independently certified by INTA.

All our Jet Wake Barriers are designed to offer:

- Protection from jet wake and propeller wash thrust
- Reliable, long service life
- Aesthetic and stylish appearance
- Installation on existing apron / ramp concrete typically suitable

Noise Control Solutions for Airports

IAC Acoustics is able to provide solutions to reducing the noise impact of airports on neighbouring communities and ground staff. Our acoustic head of stand cabins provide the ultimate haven for ground staff, improving productivity, whilst our range of barriers reduce the noise of aircraft whilst on the ground.

Acoustic Head of Stand Cabins - FliPods

FliPods from IAC Acoustics create a quiet place where ground handling staff are able to work and relax close to where they are needed, resulting in a positive impact on productivity, saving time and money.

Walking between terminal buildings and boarding gates can be quite time consuming as airports become increasingly larger. Ground handling operators no longer have to travel to and from terminal buildings for doing paperwork or indeed taking a break from the noisy environment.



Acoustic Barriers and Screens

Reducing the noise impact of aircraft once on the ground and taxiing around the apron is of huge benefit to airports, especially those in close proximity to residential areas.

IAC Acoustics offer a complete range of acoustically certified high performance barriers to solve a variety of environmental noise pollution problems. All our acoustic barriers have a guaranteed and proven, sound reduction rating and manufactured with sound absorptive surfaces to minimise reflected noise. Manufactured to a high standard, our barriers are rugged, abuse-resistant, long-lasting, weather resistant and almost maintenance-free. From an aesthetic point of view, we are also able to offer a wide choice of finishes to blend with individual landscapes or best match existing buildings.

A Complete Range of Barrier Systems Absorptive

Our free standing barrier systems are sound absorptive on one or both sides, offer excellent sound transmission loss (STL) characteristics and are rapidly assembled from prefabricated

components. Panels are simply stacked between steel posts to achieve the desired height.

Cladding Modules

IAC manufactures three different types of acoustic panels which are specifically designed to attach to new or existing walls/barriers to improve their acoustic performance. These sound absorptive cladding modules are especially good for reducing reflected sound.

Acoustic Performance

All our acoustic barriers offer exceptional transmission loss characteristics and incorporate proven, sound absorbing materials which prevent noise reflections. Free standing barriers can give up to 14dB transmission loss at 125Hz.

Installation & Maintenance

We offer a full design, delivery and installation service, which can also include all necessary structural steelwork. Barriers can be erected by our own, trained personnel. Alternatively, they can be installed by others (contractors, end users etc).

Other Aviation Testing Solutions

World-Leading Aero-Engine Testing Solutions

As a world-leader in the diverse disciplines of aero-engine testing solutions, IAC provides standard and custom facilities for a wide range of civil and military aviation requirements.

We are among the world's foremost suppliers of turnkey, automated aero-engine/aircraft test facilities. For over 50 years we have been designing and building: multi-engine test cells, hush houses, ground run-up pens, mobile, 'propeller-on' and APU test facilities. We supply military and commercial aircraft operators, engine manufacturers and overhaul agents internationally.

Our complete service includes initial design through to manufacture and construction, installation, commissioning and in-service support as well as adapting and upgrading existing test cells. IAC also designs and builds state-of-the-art electronic data acquisition and processing systems for both new and existing test facilities.

Features and benefits

- Total project management service
- All civil, structural, acoustical mechanical and electrical design/construction
- Excellent acoustic performance
- CFD, noise map and aerodynamic modelling
- Acoustic building systems
- Modular options
- Data acquisition and processing systems
- Multi-engine testing
- Technical support
- SS EN ISO 9000:2000 quality assured



The IAC range of testing facilities comprises:

- Installed Testing - Hush Houses
- Un-installed Test Cells - Turbo shaft, turbo jet, turbo fan, turbo prop modular and mobile testing
- Data acquisition
- Jet wake barriers
- Ground Run-up Enclosures (GREs)
- Aircraft attenuators

Installed Testing - Hush Houses

Providing the ultimate engine testing solution, our Hush Houses are designed to accommodate a variety of aircraft. They are suitable for installed engine testing and are also able to accept an engine test stand for un-installed testing. Hush Houses provide a round-the-clock, all-weather, aero-engine test capability.

- Able to accept a variety of aircraft
- Optional un-installed testing capability, suitable for turbo shaft and turbo fan engines
- Excellent noise attenuation
- Totally air-cooled exhaust system - low maintenance

- Available in a variety of construction materials e.g. concrete/steel
- Suitable for use in a wide range of climatic conditions - from arctic to desert



Operational efficiency is assured in the final design as prior to manufacture all IAC facilities are thoroughly model tested and proven in IAC's acoustic laboratory using CFD analysis. IAC Hush Houses are provided complete with all necessary safety and support systems.

- Full M&E package
- Choice of integral fire suppression system - water fog, foam or inert gas.
- IAC 'Aquarius' Data Acquisition System
- Integral fuel system
- Engine start system
- Quick turnaround - multi-engine test stands
- Fluidic and pneumatic systems
- Separate control and auxiliary rooms/crew quarters
- Air conditioning and heating systems

IAC Hush Houses are used widely and effectively support many of the world's military and civil aviation operations.

Uninstalled Test Cells - Turbo Shaft, Turbo Jet, Turbo Fan and Turbo Prop

IAC leads the market in both the design and build of test cells for un-installed aero-engines and in the adaptation and upgrading of existing test cells to give them the capability to handle new and/or different engine types.

While multi-engine testing is a common requirement, every test cell is customised to suit client needs. We serve military and civil aircraft operators as well as aero-engine manufacturers.

Mobile Test Cells

An example of our mobile test facilities is the award-winning Mobile Test Facility (MTF). This fully mobile, stand alone unit was developed to meet and exceed a requirement of the UK Ministry of Defence. Air-, land and sea-transportable, it has second-line engine test capability enabling testing of a wide range of engines to flight idle speed, with a full performance option.

- Fully transportable
- Adaptable for various engine types
- Fully self-sufficient, stand alone
- Acoustic control room
- Automatic Data Acquisition System
- Ergonomic control console
- On-board fuel system
- Autonomous power generation
- Local power feed option
- Commercial off-the-shelf equipment

The base control module of all IAC mobile test facilities is a trailer-based system. This can accommodate a variety of test stands for full performance testing of various engine types.

IAC ADAS Data Acquisition System

IAC's 'Aquarius' Data Acquisition System (ADAS) provides low cost, real-time, full-colour data processing and display of over 200 engine parameters simultaneously. Clear, user-friendly displays on the operator's screen appear in both analogue and digital formats. ADAS screens are tailored to customers' specifications, consulting with operators and the engine OEM, to meet any specific end user and engine requirements.

The system, which is Windows-driven, includes a low/high visual and audible alarm system with computer-controlled engine shutdown if performance thresholds are exceeded. Every system incorporates as standard, fully configurable, 'Black Box' event logging which is password protected. Events are logged over a rolling 10-minute period allowing for rapid and accurate fault diagnosis.

Operators use a menu to select tools which aid fault diagnostics, data management, test bed configuration and more, while two clicks of a mouse can enable the operator to switch between one engine type and another.



www.iac-acoustics.com