INDUSTRY FOCUS

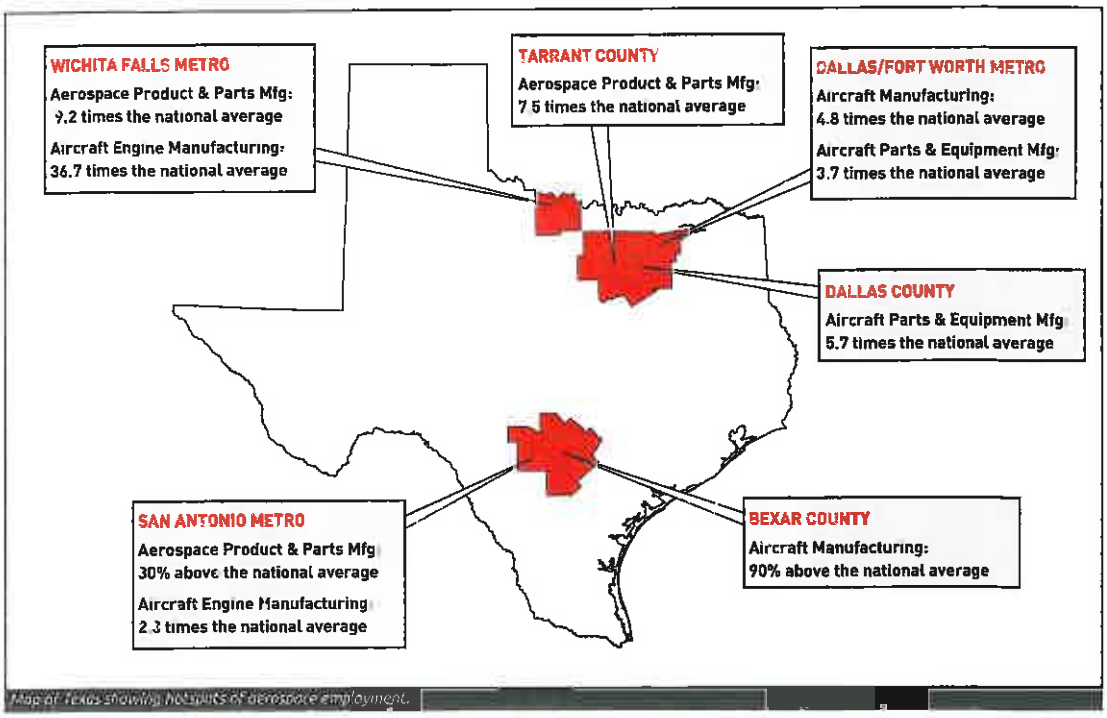
Aviation focus: Texas

With a broad spread of airframe, engine and component manufacturers, maintenance companies, and supply chain and software solutions providers, Texas ranks in the top three aerospace hubs in the United States. What makes the state such an attractive place to do business?

"Texas' delightful crisp blue skies seem to reflect the general business attitude of its occupants," observes Terry Hix, president of end-of-life solutions company Reliance Aircraft International, based in Austin. He says there is a "uniquely positive, entrepreneurial, friendly attitude" which encourages growth through financial support from private and venture fund capital as well as institutions.

According to Hix, the high number of small-to-medium and privately owned businesses in amongst the national and international heavyweight players enabled Texas to put up a strong resistance to the recession of 2008, and that as a result the state "faired very well".

Hix's assertion is supported by the 2008-2010 analysis of the US Bureau of Labor Statistics, which found that Texas was the only state to add aerospace manufacturing jobs to its economy during that period ("Texas Aerospace and Aviation Industry Report', September 2011). According to the 'Industry Report' compiled by the office of the Governor, aviation is responsible for employing 200,000 workers at 1,665 establishments, across: manufacturing and testing; maintenance services; supply chain solutions;



Map of Texas showing hotspots of aerospace employment.

"Texas is an excellent business environment for aviation."
Glen Buckley, GM, Chromalloy San Antonio

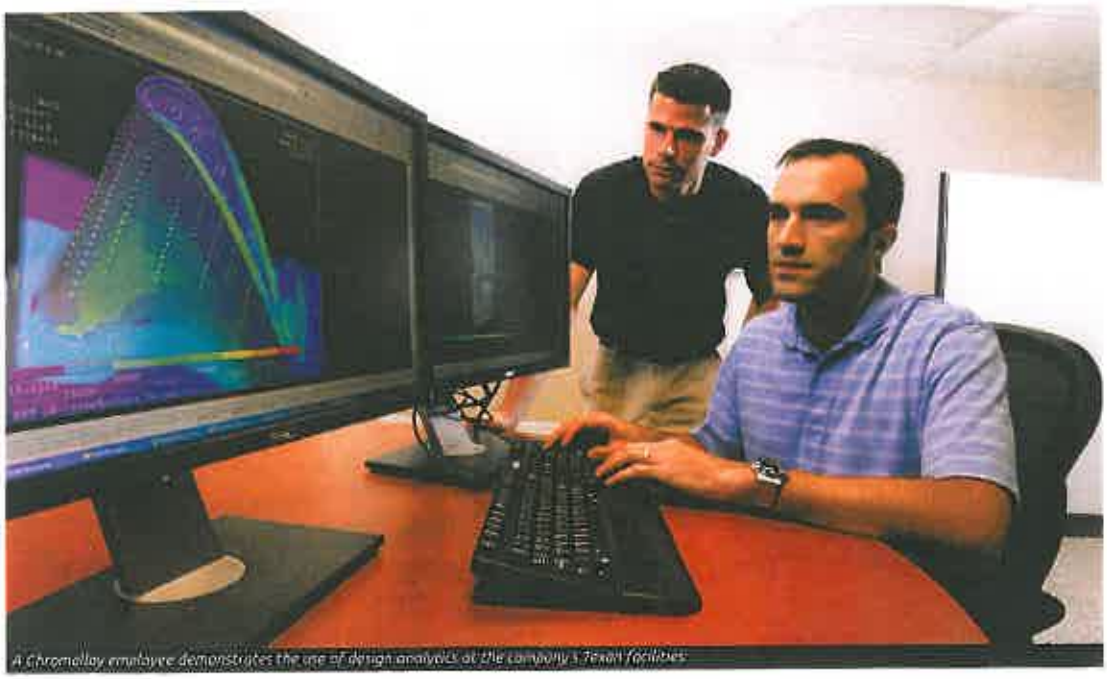
advanced research; flight training; military aircraft development; and space exploration.

The airframers present in Texas are: Boeing; Lockheed Martin; Bombardier Aerospace; Gulfstream Aerospace; Hawker Beechcraft; and Cessna Aircraft. On the engine side, the original equipment manufacturers (OEMs) are: Pratt & Whitney; Pratt & Whitney Canada; GE Aviation; and Rolls-Royce. Third-party maintenance services are provided by companies such as Kelly Aviation Center; ST Aerospace; StandardAero; Texas Aero Engine Services; and Dallas Airmotive. Amidst a sprawling supply chain, major systems and components manufacturers and suppliers include well-known names such as Goodrich, Honeywell, B/E Aerospace and Aviall. According to the 'Industry Report', Boeing alone has more than 1,300 suppliers in Texas feeding its needs in commercial aviation, defence and space — companies which are responsible for $1.9bn of purchases every year.

Non-OEM parts and coatings provider Chromalloy is one of the large international corporations which has seen fit to set up business in Texas, with a turbine engine component repair operation in San Antonio and an annex in Dallas taking their place in a global service centre network. "Texas is an excellent business environment for aviation," states Glen Buckley, GM, Chromalloy San Antonio. He explains that the San Antonio facility is located in the 7.7million ft² Port San Antonio Industrial Park which evolved out of the now defunct Kelly Air Force Base, and thus enjoys "a strong legacy".

Buckley says the San Antonio operation was developed after a successful collaborative bid for a 'Propulsion Business Area' contract in 1999 "which contracted engine work formerly performed by Kelly". Today, the 292,000ft² repair and manufacturing centre still holds US Air Force contracts as well as handling business from major airlines and maintenance, repair and overhaul (MRO) providers around the world. Chromalloy's Dallas site, meanwhile, serves OEMs and other customers with advanced component repairs.

The military flavour of today's Texan aviation industry can be attributed to its history and culture, especially the proliferation of Air Force sites during World War II. As Chuck Artymovich, president and GM at Kelly Aviation Center, notes:



A Chromalloy employee demonstrates the use of design analysis at the company's Texan facilities

"At one time the location of four air force bases and one army base, San Antonio, Texas, is known as 'Military City USA'." A joint venture between Lockheed Martin and Rolls-Royce, Kelly Aviation Center builds new engines for F-16 fighter jets as well as supplying commercial customers with MRO and test services for CF6-50, CF6-80 and CFM56 engines.

According to the 'Texas Aerospace and Aviation Industry Report', the state is currently home to nearly a quarter of a million people working in defence in either a military or civilian capacity. The end result is that aviation companies in Texas are able to benefit from a stream of talent originating from the military sector – in Artymovich's words, "an abundance of well-trained, highly qualified personnel". Buckley agrees that Chromalloy has found "a robust and talented work force in San Antonio and Dallas". Furthermore, in parallel with the military, the major defence contractors possess their own highly skilled staff who may transfer to the commercial sphere. These companies include: Lockheed Martin; Boeing; Rolls-Royce; EFW; L-3 Communications; Raytheon; Sikorsky Aircraft; and Triumph Aerostructures, Vought Aircraft Industries Division.

Education, the state and aviation

The Texan aviation industry is also well provided for in terms of educational establishments, with 23 aeronautical college or university programmes, 36 public high schools offering aeronautical courses, and 13 maintenance technology schools approved by the Federal Aviation Administration (FAA). Hix names the University of Texas as one of the top universities in the area, providing "a steady flow of young, talented, ambitious and educated people". It is, he says, "a wonderful employee base to draw on". He adds that local graduates and other ambitious young individuals who enter the Texan job market will be able to achieve a high yet affordable standard of living. Artymovich agrees that cities such as San Antonio, large and lively, are "very attractive to new hires".

Aviation companies in the region make certain to support the delivery of training which is relevant to their businesses by entering into collaborations with educational institutions. Chromalloy, for instance, has joined forces with technical colleges and industry partners in San Antonio on an internship programme for mechanics and machinists. Buckley says the company's San Antonio facility also works closely with the Alamo Area Aerospace Academy, a collection of 15 local school districts plus St Philip's College, San Antonio College, the City of San Antonio, in order to "create a pipeline of aerospace talent in the local community". He says the arrangement has provided "a steady supply of skilled workers".

Indeed, Artymovich believes that for Kelly Aviation Center — a founding partner of the

Alamo Area Aerospace Academy, a scheme he says has achieved national recognition — collaborations with local educational establishments have been "a key component of our success".

In addition, Kelly provides summer co-operatives and internships for secondary school pupils and engineering students at Texas A&M, University of Texas in San Antonio, University of Texas in Austin and Embry-Riddle Aeronautical University. Importantly, Kelly keeps the college instructors themselves up to date with the latest techniques and technologies by offering "externships" for staff at Texas A&M and St. Philip's College. It is vital that knowledge and capabilities within the education system and the industry are continually evolved to meet changing needs. Artymovich explains: "As commercial aircraft engines become more technologically sophisticated, we are seeing a shift in the kinds of work skills and technologies we need." He sees a "definite transition from mechanics/technicians to machinists/engineers".

Besides ensuring the ability of the local talent pool to meet future recruitment needs, Kelly benefits directly and immediately from working closely with academic institutions. For example, the Southwest Research Institute (SwRI) helped the company to develop an interactive training video for test cell emergency procedures which Artymovich says has been "highly effective" in preparing personnel for worst-case scenarios.

It is not only companies with a big appetite for skilled technicians such as MROs and repair shops which benefit from Texas' plentiful talent pool. Even software providers, for whom location is less of an issue, are grateful for the recruitment opportunities in Texas. Chiqueta Edberson, marketing manager at Aeroexchange, a supply chain solutions company based in Irving, comments that "our location makes recruiting personnel with the appropriate skills fairly easy, and in our case we typically are looking for technical people".

Texas' role as an aerospace hub is also important for client contact. For example, maintenance solutions developer Omega Airline Software is based in Dallas, close to customers such as United-Continental and Southwest. Edberson adds: "For us, developing our business stems around building relationships with airlines, MROs, OEMs, and repair vendors and we do this through site visits, tradeshows, 'WebEx' presentations, and partnerships." Reliance Aircraft International's Hix also points out the convenience of Texas' geography within the US as a whole: its central location "allows simple commutes to the major participants in the industry".

Sam Symonds, president and CEO of Co-Operative Industries Aerospace & Defense (CIA&D), an interconnect solutions company based in Fort Worth, says that his business, although small, "has had great success in finding qualified, local personnel". He attributes this to "the expansion and contractions of large businesses in the area". CIA&D itself announced the expansion of its facilities in February 2011. According to Symonds, the company was able "to take advantage of opportunities that allowed us to strategically overdevelop the new facility during the renovation process" such that the new layout and infrastructure will be able to accommodate future growth.

Symonds says that in general, Texan municipalities "offer very good incentives to companies relocating or expanding within the state" and that local and state governments are "very aggressive in luring out-of state businesses". Indeed, in 2003 the Texas Enterprise Fund (TEF)

A Co-Operative Industries employee at work in Fort Worth.

The Kelly Aviation Center shop floor in San Antonio.

"The Greater San Antonio Chamber of Commerce is always ready to support our efforts."

Chuck Artymovich, President and GM, Kelly Aviation Center

was established to attract investment in the state, and has since been reauthorised three times. According to the 'Texas Aerospace and Aviation Industry Report', it is the largest such "deal-closing" fund in the US, used as a final incentive in cases where Texas is competing against out-of-state alternatives. Nearly $44.5m has been awarded to aerospace projects involving companies such as Triumph Aerostructures ($35m) and Lockheed Martin ($5.48m).

Furthermore, in 2004 aerospace was designated as one of six key areas for economic development. Consequently, the Office of Aerospace, Aviation and Defense has been working closely with industry decision-makers, fellow governmental agencies and academic institutions in order to co-ordinate stimulus and development activities. Even where financial incentives are not involved, says Artymovich, support from local and elected officials helps companies to secure strong positions for the future. "The Greater San Antonio Chamber of Commerce is always ready to support our efforts," he states.

In 2005, the Texas Emerging Technology Fund (TETF) was established to provide the state with an edge in terms of research and development and the commercialisation of new technologies. The TETF has collaborated with local universities and invested nearly $8.9m in aerospace projects so far, including $2.5m to AdviTech, a company specialising in motion sickness solutions, and the University of Texas Health Science Center (UTHSC).

These incentives are not always irresistible, however. In November last year BAE Systems announced plans to close its 223,000ft² facility in Irving in favour of a new location in Fort Wayne, Indiana. The company cited the prevailing economic conditions and a competitive market as the reasons behind the move. BAE's restructuring involves the loss or transfer of 160 jobs in Texas. A bigger impact will be felt from the closure of the 200-acre American Airlines Fort Worth maintenance base which employs around 2,000 personnel, announced in February 2012. The airline had previously avoided outsourcing the maintenance of its fleet but is implementing cost-cutting measures after filing for Chapter 11 towards the end of last year. Many aviation com-

United Airlines, newly merged with Continental, has a key hub at George Bush Intercontinental Airport, Houston

panies feel the cost of labour in Texas is competitive; however, as aircraft are mobile assets which can in theory be transported anywhere in the world, AA may find cheaper maintenance solutions elsewhere — despite the protests of unions over safety concerns.

Aviation large and small

The other major carriers in Texas are Southwest Airlines, in Dallas, and United-Continental, in Houston. Both have undergone mergers in the past year, with Southwest buying AirTran for $1.4bn in May 2011, and are consequently having to restructure their operations, including maintenance provision. Integration of the fleets is also likely to result in substantial cabin interior and livery work, some of which will be conducted or sourced in Texas.

Manufacturers of interior components with a local presence include seat suppliers Weber Aircraft in Gainesville and Regent Aerospace in Dallas, as well as B/E Aerospace in San Antonio, as noted earlier. Interior and exterior lighting manufacturer Luminator is also located in Plano, serving commercial, general and military aviation customers. Dean Baldwin Painting, meanwhile, relocated from Florida to Texas in 2004 after being contracted by ST Aerospace to provide all of its strip and paint requirements in San Antonio. The company says its other clients in the region include: United Airlines; Southwest Airlines; AirTran Airways; Boeing VIP Division; Associated AirCenter; and even the National Aeronautics and Space Administration (NASA) at Houston's Lyndon B. Johnson Space Center (JSC).

George Bush Intercontinental Airport (IAH), Houston, has become the largest hub for the new United, now the largest airline in the world. According to the 'Texas Aerospace and Aviation Industry Report', IAH is the seventh busiest airport in the US, ranked 25th in the world. It serves around 20m passengers per year and indirectly employs 188,000 people, contributing $19bn to the Houston economy. DFW International Airport sees even greater traffic, serving more than 27m passengers in 2010, supporting 300,000 jobs and bringing $17bn to the North

Texas economy. The 'Industry Report' says that, measured by passenger traffic, DFW is the fourth busiest airport in the US and number eight in the world.

The other major commercial airports in Texas, all ranked within the top 50 airports in the US for passenger traffic, are as follows: Houston Hobby; Austin-Bergstrom; San Antonio; and Dallas Love Field. Hobby, Austin-Bergstrom, San Antonio and Dallas Love Field are all currently undergoing substantial renovation work to ensure that they efficiently meet the present and future needs of Texas' commercial aviation industry. Besides its 27 passenger airports, Texas also boasts the Alliance Airport in Fort Worth which is dedicated to industrial, logistical and military requirements.

Due to the size of the state, and for cultural reasons, Texas also has a notably healthy business and general aviation industry, including 9,325 registered corporate aircraft and 1,625 private landing sites. This market, popularised by aviation legends such as Texan-born Howard Hughes, is served by: Bombardier Aerospace in Richardson; Gulfstream Aerospace in Dallas; Hawker Beechcraft and Cessna Aircraft in San Antonio; as well as companies such as Associated AirCenter in Love Field, which offers completions, avionics and maintenance services. Texas' 395 public landing sites incorporate: 67 business airports; 106 community service airports; 68 basic service airports; and 24 reliever airports. The Texas Department of Transportation Aviation Division estimated that in 2005 the impact of the state's general aviation added $8.7bn to the $40.1bn earned by the commercial aviation service sector ('Texas Aerospace and Aviation Industry Report', September 2011).

Citing 2009 figures from the US Census Bureau, the 'Industry Report' states that Texas' more than 53,000 aerospace manufacturing employees generated $16.97bn added value and $19.48bn value of shipments. Capital investments amounted to $374m of the $3bn US total. These figures give Texas a position in the top two or three aerospace hubs nationwide. The figures refer to manufacturing prowess, but the true picture is much broader: the state's strength lies across a broad range of aerospace activities and expertise, including maintenance and repair, parts supply, software solutions, and R&D.

Co-Operative Industries supplies interconnect solutions from its base in Texas.