SAFE AIRS
An Airbus Group Company

OUR CAPABILITIES...

... We make it fly

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SAFE AIR LTD, AN INNOVATIVE COMPANY

For more than 65 years, SAFE Air has upheld a reputation of excellence and innovation in the New Zealand and international aviation industry. SAFE Air is an aviation Maintenance Repair Organisation (MRO) built on a winning combination of Kiwi can-do attitude and ingenuity, backed by unrivalled aviation expertise and the latest technology.

SAFE Air's extensive on-site facilities provide end-to-end design for aviation customers of any size.

We work with both local and international partners as required, to deliver the best value solution that meets their needs. This includes extensive support services for both fixed wing and rotary aircraft. SAFE Air actively promotes close interaction between its many specialised areas and disciplines, for a deeper understanding and superior expertise between services. This ultimately provides our customers with a highly integrated service process for smooth, on-time delivery at a competitive price.

Of course SAFE Air's biggest assets are our people, a highly specialised, professional workforce who strive for excellence in their fields. Our staff brings with them a wide range of expertise, which encompasses not only the latest sophisticated design and manufacturing technology but also the skills needed to support older aircraft.

SAFE Air services a large and varied client base of both commercial and military customers, from New Zealand and all over the world. We are a strategic partner for the New Zealand Defence Force and deliver extensive fixed wing and rotary air services to the RNZAF. These services include, but are not limited to, deep level maintenance (DLM), repair and modifications, intermediate level maintenance (ILM), publication support, delegated engineering authority, projects and surge support at the operational bases. In addition, we have permanently deployed teams at RNZAF Base Ohakea and Base Auckland, as well as a maintenance service advisor. SAFE Air also works with other defence forces around the world including the Royal Australian Air Force, Armada de Chile and Argentine Air Force.

SAFE Air's commercial capabilities include the provision of extensive support to Air New Zealand, our national carrier. SAFE Air also services New Zealand's regional airlines and private operators of both fixed wing and rotary aircraft.

Internationally, SAFE Air supports a range of commercial customers, especially in the fields of engine and propeller support. Our comprehensive, integrated systems means SAFE Air can service a single aircraft or full fleets, and also manage project work encompassing complete airframes upgrades, or embodiment of modification or upgrades. To support our Australian work, SAFE Air has established a base in Dingley, Victoria, to provide specialist propeller services.

SAFE Air's on-site facilities to enable us to provide end–to-end design, maintenance, overhaul and repair to aviation customers of any size. In addition we have a permanent team working in RNZAF Base Ohakea, and another at Base Auckland, along with a Maintenance Service Advisor. We also have a team working in Dingley, Victoria providing specialist propeller support. We are a small company, with global reach, serving customers large and small at home and abroad.

In 2015 SAFE Air became a wholly owned subsidiary of Airbus Group Australia-Pacific. This partnership has enabled us to expand our horizons further, grow in capability and expertise and we are making use of their experience across the breadth of aircraft types.

CAPABILITY OVERVIEW

This booklet provides an overview of the capabilities within our portfolio of services. Certification dictates capability is specific to parts and qualifications, but these individual requirements are enablers for us to provide you with a service. SAFE Air's Key Capability Areas are:

- Design engineering – both mechanical and avionics
- Maintenance, repair and overhaul of aircraft, engines, propellers and components
- Upgrade and life extension of aircraft and components
- Component level repair and fabrication
- Specialist services including specialist surface treatments and NDT

End-to-end support for operators and engineering organisations

QUALITY AND CERTIFICATION

Quality is central to our output; we have a We have a comprehensive quality management system, with a CASA Safety Management System in place at our Dingley propeller facility and a CAA NZ approved Safely Management System being rolled out across NZ. We take both praise and complaints seriously and have relationship management system based around CAANZ Quality requirements, ISO 9001:2008 and the aviation regulations that we apply to our work. We are also subject to regular audit and review by a number of Original Equipment Manufacturers. SAFE Air has personnel with delegations from a number of organisations including, but not limited to:

- ISO – 9001:2008 Certified
- EASA - Pt 145 (maintenance), Pt 146 (design), Pt 148 (manufacturing)
- CAANZ - Approved Maintenance Organization, Design organization, Supply organization, manufacturing organization
- CASA – Approved Maintenance Organization
- DCAG (France) – Approved Maintenance Organization
- Argentina – Approved Maintenance Organization
- Thailand – Approved Maintenance Organization
- NZDF – Approved Maintenance Organization
- Hartzell - Approved repair organization
- Hamilton Sundstrand – Approved repair organization
- Dowty – Approved Repair organization
- McCauley - Approved Repair organization
- Sensenich - Approved Repair organization
- Kaman - Approved Repair Organization

SAFE Air has a significant number of certifications across a range of regulatory bodies. We can clarify and confirm the regulations as they apply to you to ensure a fully compliant aircraft every time.

ENGINEERING DESIGN

The Engineering Design team draws its experience from its guardianship of the RNZAF's fleet, as well as ongoing supplementation of Air New Zealand's commercial aircraft engineering services requirements. SAFE Air itself has achieved over 1.5 million maintenance hours on Lockheed Martin airframes and various helicopter types, all with the close support of the current engineering design team. SAFE Air's engineering design expertise and experience includes;

- Aircraft structural repair design and approval
- Aircraft and component modification development and approval
- Structural testing
- Tooling and mechanical equipment design
- Certification and approval of design data
- 3D data capture
- Documentation Services

SAFE Air's engineering design services are available either as a part of a wider engineering programme or as a discrete service including engineering liaison, consultancy or short term contract engineers. All SAFE Air engineers are experienced at operating offsite within a customer's facility.

Our combined attributes and capabilities mean we can offer customers the opportunity to benefit from our 'Kiwi Ingenuity', our 'Can Do Attitude' and our passion for aviation. These make us ideal contenders for those smaller more complex niche projects that are typically too disruptive for larger mainstream aviation designers and manufacturers to consider. SAFE Air demonstrates the special focus and commitment to deliver totally compliant high standard results through:

- Coordinated work-flow planning and supply chain management
- Design engineering expertise to innovate, develop and certify solutions
- A broad depth of manufacturing capability, competency and experience
- High levels of quality and conformance to required standards
- Available capacity to take on short lead-time work
- Flexibility to produce one-off prototyping, and small, medium or larger production runs.

Structural Testing

Design, construction and operation of structural testing equipment to demonstrate compliance with specified loading conditions. Documentation of test plans and results. Aircraft and Component Modification Development and Approval

Tooling and Mechanical Equipment Design

The SAFE Air engineering team's experience extends to the design of unique tooling to meet specific technical requirements.

Documentation Services

SAFE Air's engineering service is complemented by a comprehensive range of documentation services including;

Technical data packages

- Engineering drawings, illustrations (2D and 3D)
- Publications created to industry standards including manual supplements
- Bulletins
- Engineering reports

Other Services

- Preparation of aircraft trim charts to FAR 121 requirements:
- Take-off and landing charts for light aircraft
- Aircraft weight and balance and Centre of Gravity calculations

Certification and Approval of Design Data

Expert advice and assistance with certification of products to comply with airworthiness authorities covering modifications, Type Certificates (TC's), Supplemental Type Certificates (STC's), Parts Manufacturing Approvals (PMA's), and Technical Standards Orders (TSO's).

Includes development of technical data to meet certification standards and compiling compliance documentation. We can also issue Design Statements of Compliance and Design Approvals and assist with EASA, CAR 35 (Australia) and FAA (USA) approvals through our global engineering design network

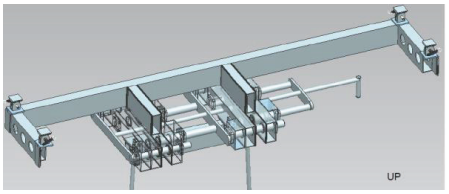
Design delegations

SAFE Air operates under Civil Aviation Authority New Zealand (CAANZ) Part 146 and CASA Part 21M Design Approvals and holds design delegations from the NZCAA, the RNZAF and previously the Royal Australian Air Force (RAAF). They have extensive experience in the application of these delegations across a range of aircraft and applications. They work closely with regulators, engineers and operators to ensure that all design solutions are appropriate to the requirement.

Repair development – new parts design

SAFE Air has particular structural experience with mature airframes such as the Lockheed Martin C-130H and P-3 Orion. Our team has developed over 500 repair schemes for a wide variety of commercial and military aircraft. SAFE Air has accumulated over 1.5 million maintenance hours on Lockheed Martin airframes, much of which has been directly supported by our onsite engineering design team.

SAFE Air regularly identifies parts needing 'out-of-scope' repairs, where the manufacturer has not provided a documented repair scheme. The Engineering Design team are instrumental in developing and approving complex repairs solutions to flight critical structures.



Sometimes it is not possible to repair an item, or a modification is required that needs the creation of a new part. The team have the experience and skills to develop suitable parts or suites of parts, assess and approve them.

The team uses the latest CAD facilities as well as accessing 3-D printing to generate mock-ups for trial fits and other checks. The SAFE Air team employs advanced laser tracking equipment to capture and display 3D coordinates for the following applications:

- Aircraft symmetry and alignment checks
- Jig alignment checks
- Positional and planarity checks
- Mapping data (damage plots on aircraft surfaces, modelling aircraft interior and exterior surfaces)
- Reverse engineering

SAFE Air can provide Design certificates of conformance, Statements of compliance, Conformity statements and Design approvals and assist with CAR 35 (Australia) and FAR 8110-3 (USA).

Design on-site support

SAFE Air has the facility to provide on-site engineering design specialist, able to support your maintenance organization to keep you flying. We provide out of hours and call out cover, as well as relocating our team on site to ensure your aircraft design requirements are met.

Engineering Design Tools

Siemens NX10 – Computer Aided Design Software including parametric and Solid/Surface Modelling and static, dynamic, electro-magnetic, thermal computational fluid dynamics and linked to both our CNC capability and a 3D printer.

Strand 7 – Finite Element Analysis software
Autocad LT - Computer Aided Design software
The Engineering Design team have the experience and the tools to solve your engineering problems.

Breadth of experience

SAFE Air has built upon our design experience and currently holds delegated engineering authority in the following areas:

Civil: Boeing 737, Beech 1900D, ATR, Bombardier Q300
Military: C130H Hercules, P-3 Orion, SH-2G(I) Seasprite

MAINTENANCE, REPAIR AND OVERHAUL

SAFE Air has a skilled workforce able to conduct inspection, repair and overhaul on a wide variety of both fixed wing and rotary aircraft. We are limited only by the size of the hangars and this can be overcome through deployment on site if required.

AIRCRAFT MAINTENANCE – INTEGRATION WITH THE RNZAF

SAFE Air provides support to operational level maintenance; we have a team permanently embedded at RNZAF base Ohakea, providing all levels of maintenance and support to the training squadron operating beech T6C Texan aircraft. This includes: flight line support, front-line, intermediate-level and depth level maintenance. This recent capability development, working with both the original Aircraft manufacturer and the operators has provided us with an opportunity to return to our roots, providing the aviators with all types of support. This development has extended SAFE Air's remit for providing maintenance services and support the through life approach to aircraft fleet management that is a central to modern aviation operations.

Another recent expansion of SAFE Air's capabilities is the integration of personnel with RNZAF engineers within an integrated Aircraft Maintenance squadron at RNZAF Base Auckland. There cross-pollination and support occurs daily. In addition, at Base Auckland we have a Maintenance Support Advisor (MSA), who provides a mechanism for exchange of ideas, concerns and queries, as well as advising on maintenance practice and working with our customer on long term strategies to maintain the aircraft on site.

AIRCRAFT REPAIR AND OVERHAUL

The facilities at Blenheim enable us to take a large aircraft to deep level maintenance, stripping paint completely, removing all the panels and equipment within and the sub-structures such as undercarriage and then overhauling and repairing, either in situ or by transferring to our specialist services workshops, before putting back together and conducting static and then dynamic testing and running. Each section of work is led by a suitably qualified release to service engineer and is conducted in accordance with the appropriate regulatory body.

We have a wide range of skillsets within the team, and they are all certified as required to provide suitable qualifications to satisfy regulatory requirements. Our wide range of certifications means that we have a highly agile and capable workforce. We have a close relationship with both the Nelson-Marlborough Institute of Technology (NMIT) and the RNZAF training organisation to support and develop apprentices and junior aircraft technicians, developing them into knowledgeable personnel able to adapt to your aircraft needs as required. We have a strong planning organisation, designed to assure work timeframes and output. Safety is paramount, and we ensure that the team has suitable equipment at all times.

SAFE Air has the facilities to support aircraft with dimensions up to 80m long, 10m high and 40m wide

Breadth of experience

SAFE Air has built upon our aircraft experience over the years and currently conducts MRO activities on the following aircraft types:

Civil: 737

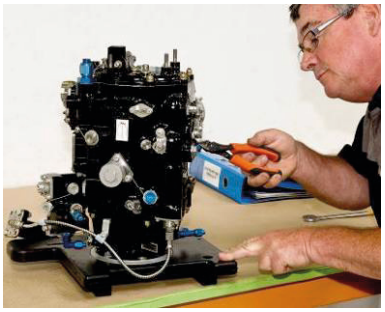
Military: C130, P-3, Sea Sprite, Beech T6C TEXAN

Our adaptable personnel are awaiting the opportunity to work on your aircraft

ENGINE REPAIR AND OVERHAUL

SAFE Air has wide experience of engine and accessories overhaul, both for propeller and jet type gas turbines, and their ancillary and support equipment. Overhaul takes the engines down to component level and enables repair or replacement of individual component parts. The engines are then rebuilt and statically tested before the engines are placed back into their nacelles.






Propeller engines are then re-united with their propeller systems, jet systems are re-built and once all fitted together and fully dressed, dynamically tested on the SAFE Air Mobile Engine Test System (METS) to ensure that they are back to full operating capability. SAFE Air is the only business in the southern hemisphere able to test engines this way SAFE Air capabilities in this area:

Engine breakdown into modules

Component repair, including turbine and compressor rotors

Manufacture of specialised parts (in accordance with our licencing agreements)

Static and dynamic testing of systems

SAFE Air is able to support both propeller and jet engine systems of any size

Breadth of experience

SAFE Air has built upon our engine experience over the years and currently conducts MRO activities on the following engine types:

Military: Rolls Royce T56, Pratt & Whitney J52

Civil: Rolls Royce T56, 501D

ENGINE SUPPORT UNITS

As part of our complete airframe and engine service to our military customers, SAFE Air also overhauls Engine Support Units for the C130 and P3 aircraft. Overhaul capability, which pulls on our specialist services workshops, includes cleaning, inspection, repair and test including incorporating modifications as agreed with the customer and in accordance with authorised manuals.

LIFE EXTENSION AND UPGRADE PROGRAMMES

In today's world, asset life has a tendency to be extended as we try to overcome cost of ownership issues by running equipment for as long as possible. Aircraft and their components are no exception. Some aircraft in the skies above us are over 60 years old. This is only possible through the management of life, control of obsolescence issues and suitable maintenance programmes. SAFE Air is experienced in the provision of support to such aircraft, recently completing LEP programme for C130H alongside the NZ MOD. Your elderly aircraft still has life in it, but it's best to ensure that the structure and systems within remain is full working condition through inspection, replacement and upgrade as required. In addition, ageing aircraft may require more in-depth inspections and repairs in specific areas, SAFE Air is able both to identify where these historic problem areas lie, and provide a suitable inspection regime and repair schemes to ensure the continuing airworthiness of you craft.

Mid-life inspection and updates of aircraft systems keeps the running safely in the long term

Breadth of experience

SAFE Air has built upon our experience as an OEM and is capable of conducting LEP programmes across the gamut of aircraft fleets. Recent work has concentrated on the C-130 and P-3 fleets; however we have extensive previous experience in the civil airline world too.

PROPELLER REPAIR AND OVERHAUL

SAFE Air propeller systems support starts at the removal from the engine nacelle and separation into constituent parts, the governor, spinner and propeller blades themselves are all repaired and overhauled as required. SAFE Air experience in this area covers both large metallic blades such as those found on C130 aircraft and the more modern, smaller composite blades in use on commercial airline aircraft.

SAFE Air is an authorised Hartzell repair facility, subject to regular rigorous audits to ensure that we comply with Hartzells' required skills and assurance. SAFE Air personnel are also highly experienced in composite blade repairs and support, as well as balance.

SAFE Air has 2 propeller facilities. The Blenheim team is co-located with the Engine bays to enable a full engine and propeller overhaul unit. Our Customer Support Engineer is on hand to assist with all our customers queries and needs.

SAFE Air is very happy to receive propellers without their associated engine for processing. This is often the case for small aircraft or for large operators of propeller aircraft where the servicing requirement is divorced from the engine servicing requirement, or where there are modifications or inspections needed.

SAFE Air Australia (PTY) Ltd is a self-contained facility in Dingley, Victoria, which has NDT, Cold-rolling, Optical comparators and hydromatic test equipment , as well as the capability to conduct nickel leading edge replacements on Dowty and Hamilton Sundstrand blades. The Australian facility is also a distributor for Dowty, Hamilton Sundstrand, Hoffman, McCauley and Sensenich propellers.

Visit the SAFE Air Australia page on our website for more information:

www.safeair.co.nz/propellers/sa-australia/

An official Service Centre for a number of manufacturers and depth of experience across the range

Breadth of experience

SAFE Air has built upon our propeller experience over the years and currently conducts MRO activities on the a wide variety of propeller types in both new Zealand and Australia. The list below comprises our current capability under regulatory approvals. If you have an alternative propeller, please come and see us as we are likely to be able to accommodate your needs.

PROPELLERS CAPABILITY – SAFE AIR BLENHEIM

Dowty Aerospace Propellers – Metal

Part Number	Authority			I	R	O
R175/4-30 Series	CAA	EASA		Y	Y	Y
R193/4-30 Series	CAA	EASA		Y	Y	Y
R193/4-30-4/61, 4/64, 4/63, 4/65	CAA	EASA		Y	Y	Y
R212/4-30 Series	CAA	EASA		Y	Y	Y
R251/430 Series	CAA	EASA		Y	Y	Y
R257/430 Series	CAA	EASA		Y	Y	Y
R333/4-82 Series	CAA	EASA		Y	Y	Y
R334/4-82-F/13	CAA	EASA		Y	Y	Y
R321/482 Series	CAA	EASA		Y	Y	Y

Dowty Aerospace Propellers – Composite

Part Number	Authority			I	R	O
R354/4-123 Series	CAA	EASA		Y	Y	Y
R375/4-123 Series	CAA	EASA		Y	Y	Y
R389/4-123 Series	CAA	EASA		Y	Y	Y
R390/4-123	CAA	EASA		Y	Y	Y
R391/6-132 Series	CAA	EASA		Y	Y	Y
C130 J Spinner – Dynamic Balance	MIL				Y	Y

Hamilton Sundstrand Propellers - Metal

Part Number	Authority			I	R	O
2D30	CAA	EASA		Y	Y	Y
12D40	CAA	EASA		Y	Y	Y
22D40	CAA	EASA		Y	Y	Y
2E+51	CAA	EASA		Y	Y	Y
54H60 – 91 & -117	CAA			Y	Y	Y
54H60 – 77 & -111	MIL			Y	Y	Y
24D50	CAA	EASA		Y	Y	Y

Hamilton Sundstrand Propellers – Composite

Part Number	Authority			I	R	MI
14RF – 9, 19, 21	CAA	EASA	FAA	Y	Y	Y
247F Series	CAA	EASA		Y	Y	Y
14SF –5,-7,-11,-15,-23 Repair: SK122811	CAA	EASA	FAA	Y	Y	Y
568F-1	CAA	EASA	FAA	Y	Y	

Hamilton Sundstrand Propeller Controllers

Part Number	Authority			I	R	O
710085-1 P3 Valve Housing	MIL			Y	Y	Y
727785-1 P3 Pump Housing	MIL			Y	Y	Y
733872-5 C130 Pump Housing	MIL			Y	Y	Y
714325-5 C130 Valve Housing	MIL			Y	Y	Y

Hamilton Sundstrand Propeller Negative Torque Bracket

Part Number	Authority			I	R	O
557076	MIL			Y	Y	Y
738337-1,2,3,4	MIL			Y	Y	Y
572942	MIL			Y	Y	Y
738338-1,2,3,4	MIL			Y	Y	Y

Hartzell Propellers

Type	Authority			I	R	O
Steel Hub Propellers for Piston Engines	CAA	EASA		Y	Y	Y
Steel Hub Propellers for Turbine Engines	CAA	EASA		Y	Y	Y
Five-Blade Propellers for Turbine Engines	CAA	EASA		Y	Y	Y
Three and Four Blade Lightweight Propellers for Turbine Engines including Composite blades	CAA	EASA		Y	Y	Y
Compact Non-Feathering (-1) Propellers	CAA	EASA		Y	Y	Y
Aerobatic (-4) Propellers	CAA	EASA		Y	Y	Y
Compact Constant Speed and Feathering (-2) Propellers	CAA	EASA		Y	Y	Y
HC-B3TN-3C/3D	CAA	EASA	FAA	Y	Y	Y
HC-B4TN-3/-5	CAA	EASA	FAA	Y	Y	Y

McCauley Propellers

Type	Authority			I	R	O
McCauley Fixed Pitch All types	CAA	EASA		Y	Y	Y
McCauley Threadless Series Constant Speed	CAA	EASA		Y	Y	Y
McCauley Threadless Series Constant Speed and Feathering	CAA	EASA		Y	Y	Y
McCauley Threaded Series Constant Speed	CAA	EASA		Y	Y	Y
McCauley Threaded Series Feathering	CAA	EASA		Y	Y	Y
P11036416-0116	CAA	EASA		Y	Y	Y
P11046417-0117	CAA	EASA		Y	Y	Y
P65364-1-0455	CAA	EASA		Y	Y	Y
P7716790-0156	CAA	EASA		Y	Y	Y
4HFR34C653 & D-40354 Slip Ring	CAA	EASA		Y	Y	Y
4HFR34C771	CAA	EASA		Y	Y	Y
B5JFR36C1103	CAA	EASA		Y	Y	Y
C5JFR361104	CAA	EASA		Y	Y	Y

Hoffman Propellers

Part Number	Authority			I	R	O
HO-V144( )- DFR Series	CAA	EASA		Y	Y	Y

Fairy Reed Propellers

Type	Authority			I	R	O
Fixed Pitch all Types	CAA	EASA		Y	Y	Y

Sensenich Propellers

Type	Authority			I	R	O
Fixed Pitch all types	CAA	EASA		Y	Y	Y

De Havilland

Part Number	Authority			I	R	O
3HF	CAA	EASA				
PD30-211/1 – DH Series 1000	CAA	EASA		Y	Y	Y

Curtis Propellers

Type	Authority			I	R	O
Limited to War Bird and historic propellers	CAA			Y	Y	Y

PZL

Part Number	Authority			I	R	O
US-122000	CAA				Y	No

Nanchang

Part Number	Authority			I	R	O
J9-G1	CAA				Y	No

Dowty Aerospace Propellers – Metal

Part Number	Authority			R	O
R324/4-82 Series	CASA	EASA		Y	Y
R333/4-82 Series	CASA	EASA		Y	Y
R334/4-82 Series	CASA	EASA		Y	Y
R321/4-82 Series	CASA	EASA		Y	Y

Dowty Aerospace Propellers – Composite

Part Number	Authority			R	O
R354/4 –123 Series	CASA	EASA		Y	Y
R375/4 –123 Series	CASA	EASA		Y	Y
R339/4-123 Series	CASA	EASA		Y	Y
R389/4-123 Series	CASA	EASA		Y	Y
R390/4-123	CASA	EASA		Y	Y
R391/6-132 Series	CASA			Y	Y
R352/6-123 Series	CASA	EASA		Y	Y
R410/6-123 Series	CASA	EASA		Y	Y

Hamilton Sundstrand Propellers – Metal

Part Number	Authority			R	O
22D30	CASA			Y	Y
22D40	CASA			Y	Y
23D40	CASA			Y	Y
23EX 319	CASA			Y	Y
23F60	CASA			Y	Y
24D50	CASA			Y	Y
24D60	CASA			Y	Y
2E+51	CASA			Y	Y
2E+61	CASA			Y	Y
24F60	CASA			Y	Y
33D50	CASA			Y	Y
3E+61	CASA			Y	Y
802255	CASA			Y	Y
792000	CASA			Y	Y

Hamilton Sundstrand Propellers – Composite

Part Number	Authority			R	MI
14RF –9,-21	CASA			Y	N
14SF –5,-7,-11,-15,-23	CASA			Y	N
14RF Oil Transfer Tube 814782-1,-2,-3; 790202-1,-2,-3.	CASA			Y	Y
14SF Oil Transfer Tube 782515-1; 814829-1	CASA			Y	Y

Hartzell Propellers

Type	Authority			R	O
Steel Hub Propellers for Piston Engines	CASA			Y	Y
Steel Hub Propellers for Turbine Engines	CASA			Y	Y
Five-Blade Propellers for Turbine Engines	CASA			Y	Y
Three and Four Blade Lightweight Propellers for Turbine Engines	CASA			Y	Y
Compact Non-Feathering (-1) Propellers	CASA			Y	Y
Aerobatic (-4) Propellers	CASA			Y	Y
Compact Constant Speed and Feathering (-2) Propellers	CASA			Y	Y

McCauley Propellers

Type	Authority			R	O
McCauley Fixed Pitch All types	CASA			Y	Y
McCauley Threadless Series Constant Speed	CASA			Y	Y
McCauley Threadless Series Constant Speed and Feathering	CASA			Y	Y
McCauley Threaded Series Constant Speed	CASA			Y	Y
McCauley Threaded Series Feathering	CASA			Y	Y

Hoffman Propellers

Part Number	Authority			R	O
HO-V Series All types	CASA			Y	Y
HO-E 292	CASA			Y	Y
HO-E 315	CASA			Y	Y

Fairy Reed Propellers

Type	Authority			R	O
Fixed Pitch all Types	CASA			Y	Y

Sensenich Propellers

Type	Authority			R	O
Fixed Pitch all types	CASA			Y	Y

Hawker Siddeley Propellers

Part Number	Authority			R	O
All Constant speed and feathering propellers	CASA			Y	Y

Curtis Propellers

Type	Authority			R	O
Limited to War Bird and historic propellers	CASA			Y	Y

ROTOR BLADE REPAIR AND OVERHAUL

As part of our helicopter support capability, SAFE Air also provides MRO to Kaman Sea Rotor Blades; this includes repairs, and conducting static balance prior to fitment on the aircraft and subsequent dynamic balance activities.

Kaman

Type	Part Number	I	R	O
Composite Main Rotor Blade	KB11001-003	Y	Y	No

SPECIALIST SERVICES

SAFE Air has a wide range of specialist services covering a huge breadth of capabilities and outputs. These services are fully part of the Maintenance, repair and overhaul capability discussed previously, and are also available as individual facilities as opportunity allows. The workshops specialise in low volume, high value output rather than mass production. The skilled workforce take pride in producing high quality aircraft parts to whatever specification and standard is required.

The Specialist Services Workshops both support MRO activity and provide output in their own right.




Machine Shop

The machine shop holds a range of equipment including CNC machines, grinding machines, lathes and drills of various types as well as welding facilities. The range of capabilities within the team is detailed further below:

Welding	TIG Roller/Spot weld for Aluminium/Stainless steel sheets to 3mm thick
Repair and manufacture Blended metal repairs	Milling machines and Lathes CNC Milling machines Low speed and high speed (1000 x 1000 x 3000m bench, can handle up to 8000mm length) CNC Centre lathe, Honing and routing machines Drills
Grinding repairs	Cylindrical grinders (Internal and external) 200mm x 1200mm and down to 50mm dia Surface Grinders Large and small - 30mm x 3000mm

Welding

Welding is performed in accordance with, AWS D17.1/D17.1M:2010 and AWS D17.2 / D17.2M: 2007.

Manufacture of aeronautical parts, components and appliances under the approval of CAANZ Part 148 certification. Repair of aeronautical parts, components and appliances under the approval of CAANZ Part 145 certification. Fabrication / Manufacturing and /or Repair to OEM drawings, SAFE Air Design Output or to a customer's approved drawing and/or specification.

Skilled craftsmen with a range of capabilities central to our overhaul capability

Breadth of experience

The machine shop team can manufacture, repair and overhaul a wide range of metal items in the full range of aviation materials. Skills include:

- Reverse engineering from assemblies or drawings to replicate parts
- Manufacture of items from Bushes to longerons
- Blending and grinding repairs to precise tolerances across the range of size, shape and materials

METAL TREATMENTS

Heat treatment

Key to maintaining strong structures, designed to withstand the pressures, temperature ranges and loading they are subjected to, Heat Treatment is a vital part of our specialist services capability.

SAFE Air has a range of ovens, managed by the specialist services team, and is able to treat aluminium, steel and titanium parts in a wide range of shapes and sizes to MIL and AMS specifications treating as required on site as part of a manufacturing process or as a stand-alone task.

Metal Treatment Specifications Supported

Specifications	Metal Type
AMS – H – 6875	Steel
MIL – H – 6875	Steel
AMS 2770	Aluminium
BAC 5602	Aluminium
BAC 5617	Steel
BAC 5619	Corrosion Resisting Steels
AMS 2759	Steel and Variants of Steel

Shot-peening and media blasting

Shot peening and plastic media blasting have a number of uses across the business. Our largest facility is a plastic media space, large enough to take significant aircraft structures. We can also use grit, wet abrasive, tungsten balls and plastic to blast parts, and have the facilities collocated with other aspects of specialist services, particularly electroplating. our trained personnel are FAA #AGL/0305/0006/8 level 2 Qualified. Our main Shot-peening capability is a 6-axis, multi-media cabinet, highly adaptable and designed to comply with precise tolerances and measurements to prepare flight critical parts to specific requirements including steel (AMS-S-13165) and glass bead (AMS 2431/6).

The cabinet has a 1000mm turntable and measures 3000 x 3000x 2000mm in size.

SAFE Air also holds rotor/flap peening equipment, meaning that we can come to you, peen the item in situ and prepare it for painting or other surface treatment. Standards Supported: Mil-R-81841, AMS 2390.

Electroplating

SAFE Air has the largest electroplate facility in the southern hemisphere supporting a huge range of processes and material and can work with both AMS and Mil-spec requirements. The team can work on wide variety of sizes and shapes, using an overhead gantry to manoeuvre large items safely in and out of tanks, including for items that are longer than the tank depth.

To ensure that we maintain all our tanks at the specifications required, we employ a full time quality assurance chemist.

Aluminium Surface Conversion	Standards	Notes
Sulphuric acid anodise	Mil-A-8625, AMS 2471, AMS 2472	Tank Sizes: 1200mm square and 2850mm deep. A range of colour dyes can be applied to small articles (red, black, blue, red, gold etc)
Chromic acid anodise	Mil-A-8625, AMS 2470	
Hard Anodise		Tank Sizes
Chromate conversion Coatings	Mil-DTL-5541	Tank Sizes
Anodise Strip	Mil Std 871	Tank Sizes
Brush plating (fully mobile)	Mil Std 865	Selectron and Dalic units are employed with a full range of electrolytes. The process is suitable for in-situ repairs eg spot corrosion treatment and protection, rebuilding of worn areas, pit-filling of hydraulic cylinders and other plated items.

A wide variety of treatments are available, both as an individual job and a part of an overhaul

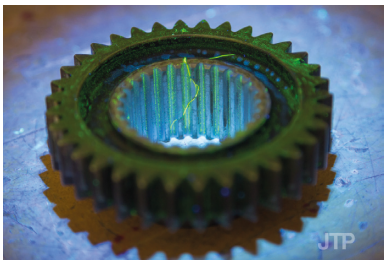
Other coatings	Standards	Notes
Cadmium	Mil-Std-870, AMS-QQ-P-416, AMS2400	Tank Sizes: 1200mm square and 1050mm solution deep. Tank 1: bright specular deposits Tank 2: high tensile steel Chromate coatings can be applied to cadmium deposits
Chromium	AMS 2460 AMS 2406 Mil-STD-1501	Tank 1200 mm square and 2250 mm solution depth
Chromium strip	MIL-STD-871	Tank 900mm square ad 1050 solution depth
Copper	AMS 2418	Tank 900mm square and 750mm depth
Tin plate	Pratt and Witney SPOP27	Tank Sizes:
Nickel-cadmium diffusion	TO 2-1-111	Tank Size: Provides corrosion protection for steel parts in high temperatures (up to 482°C)
Electroless Nickel	AMS-C-26074 AMS 2404 AMS2405	Tank sizes: 3 types of solution available to provide low or high phosphorous deposits, which may be applied to most metal substrates (Incl. Aluminium). Deposit hardness ranges from Rockwell C46 to C58. Post plate heat treatments can increase this to Rockwell C72.
Silver	AMS 2410 AMS2412	Tank 900mm 750mm solution depth
Steel surface conversion coatings	Standards	Notes
Phosphate Parko GZ (Zinc-based) Parkolubrite (manganese based)	MIL DTL 16232 Type M MIL DTL 16232 Type Z AMS 2480 AMS 2481	Tank 900mm square, 1000 mm deep
Black oxide	AMS 2485 MIL DTL 1392H	Tank 900mm square, 1000 mm deep
Passivation	AMS 2700	

Salt Spray

The Electroplating bay holds a salt spray tank, which can be used for testing of coatings in accordance with the manufacturer's specifications.

NON-DESTRUCTIVE TESTING (NDT)

SAFE Air has a team of NAS 412 ASNT Level 2 NDT personnel with extensive experience applying standards and specifications with level 3 capabilities. Non Destructive inspections are carried out in various areas of the SAFE Air Business, Propulsion, Hangars and the NDT main workshop with mobile equipment available to perform



Process	Staff Qualification	Comments
Magnetic Particle Inspection to ASTM-E-1444 latest revision	NAS 410, levels 1 to 3 EN4179, levels 1 to 3 AS 3669, levels 1 to 3	Inspection also completed to the Customers/OEM's Standard.
Fluorescence Penetrant Inspection to ASTM-E-1417 latest revision	NAS 410, levels 1 to 3 EN4179, levels 1 to 3 AS 3669, levels 1 to 3	Inspection also completed to the Customers/OEM's Standard.
Radiography Inspection to ASTM-E-1742 latest revision.	NAS 410, levels 1 to 3 EN4179, levels 1 to 3 AS 3669, levels 1 to 3	Inspection also completed to the Customers/OEM's Standard.
Eddy Current	NAS 410, levels 1 to 3 EN4179, levels 1 to 3 AS 3669, levels 1 to 3	Inspection also completed to the Customers/OEM's Standard.
Ultrasonic	NAS 410, levels 1 to 3 EN4179, levels 1 to 3 AS 3669, levels 1 to 3	Inspection also completed to the Customers/OEM's Standard.

Our Level 2 NDT qualified team are always looking for new opportunities to demonstrate their skills

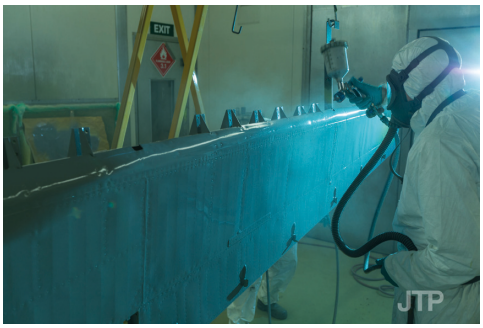
Paint Strip and re-spray

As you can imagine, painting a C130 is not a small task and it is not practicable to have a paint shop that size. As part of our deep level maintenance SAFE Air can paint aircraft in work. The team use 'Sea to Sky'™ paint stripper and then use Mil Std, AMS or otherwise stipulated paints to re-spray the aircraft/asset to suit the customer's needs. For components in work or maintenance or manufactured by our specialist workshops. At SAFE Air we have 2 options for painting:

Main Paint bay – This has an overhead gantry and is big enough to take large flight control structures

Propulsion paint bay – A small bay intended to support Engine and propeller overhauls

In addition to their re-spray skills, the painters can add decals and insignia of all shapes and sizes to the structure



Composites repair

SAFE Air has 2 areas that repair composite structures.

The Propeller shop has 2 qualified composite repair personnel who create blends and patches and repair de-laminations and damage to propellers and associated parts. The shop has its own curing oven, clean room and composite repair support facilities.

The paint shop also has a small facility that supports composite repairs on other aircraft structures, fairings, furnishings, panels and other parts though these are limited in size. These capabilities include:

- Roving Glass / Carbon Fibre
- Mould Creation
- Vacuum Mouldings
- Composite Honeycomb repairs

Laser tracking and metrology

SAFE Air holds optical alignment equipment and the expertise to use it to align both larger items (including complete airframes) and smaller sub-structures to ensure that they are aligned. The equipment can measure jigs for certification, check structural damage, component assembly testing and evaluation machine tools for run-out and wear.

The FARO Laser Tracker has incredible accuracy (0.025mm at 30m) with zero parallax error and enables SAFE Air to conduct measurements faster than traditional methods within many applications throughout a wide range of industries; measurements can be taken in-situ creating a high accuracy digital scan. Laser Tracking offers improved methods of coordinate measurement and makes entirely new manufacturing methods possible.

SAFE Air has a comprehensive metrology laboratory, enabling the confirmation and assurance of materials as they pass through heat treatment or other work, as well as checking specifications have been met. Equipment within the lab includes:

Rockwell hardness testing machines (Vickers, Easyway, Wilson) – range of 1 – 120 kg, steel or aluminium.

Tensile Testing Machine	Testing material strengths capacity 28KM load cell100cm working capacity
Laboratory Scales	Max 160 grams accuracy 0.0001 gram
Digital pH Meter	0-14pH + 0.25pH
Electronic Coating Gauge	Coatings + 5% or reading or + 0.0001 incl
Gauge Blocks (Metric & Imperial)	
Optical Flats & Assorted Equipment for Calibration of:	Measuring Equipment Pressure Gauges Torque Wrenches
Hardness Testing Vickers	Range 1 to 120 kilos on Steel or Aluminium
Furnace Calibration	Portable, calibrated digital thermometers, calibrator& print-out equipment Range 0.600°C, Accuracy 0.1°C

Structural Repair

From major wing repairs to longeron and nacelle repairs, our structures technicians and engineers work in conjunction with SAFE Air's engineering design team and the machine shop for services such as welding and plating.

Our capabilities also include changing oil and filters; any deeper level of engine or propeller service can be taken care of at SAFE Air's specialised engine and propeller departments. This side-by-side integrated system provides superior quality structural repair, on-time delivery and convenience for all our customers.

SAFE Air structural services also include forming and creating new structures for controls, wires and control rigging and weight and balance.

All military aviation repairs are performed in accordance with the Royal New Zealand Air Force repair manual; Any other repairs are completed to the manufacturer's standards.

CNC bender

SAFE Air is a leader in the manufacture of custom aviation parts and tools using computerised precision steel folding. From design conception of flat patterns to part production, all work is completed on-site by SAFE Air's highly experienced engineers and technicians.

Our on-site CNC bender machine can produce precise, high-volume work to exact specifications and retains data for any future production that may be needed. Any specialised tooling required to complete the job can also be designed and manufactured right here in SAFE Air's machine shop.

Using this ground-breaking manufacturing technology, SAFE Air can produce batches of any size. SAFE Air welcomes any enquiries about our specialised custom parts manufacturing services.

Hydraulic and Pneumatic Systems

SAFE Air has 2 calibrated hydraulic test rigs, designed primarily for pipe testing. One of which can also test nitrogen and pneumatic systems and the capability to test flexible pipelines.

- Hydraulic Static Test Rig Max pressure 6000 psi
- Pneumatic Test Rig Max pressure 1000 psi
- Flexible Oil Line Pressure Testing Tank Max pressure 1200 lbs per sq. inch

Wire Harness Bay

SAFE Air has experienced team and bay set-ups to support the laser wire marking, repair and manufacture of wire and repairs for looms and the repair or manufacture of harnesses wire harnesses for any aircraft size or complexity. Particularly experienced in production of wire harnesses for the C130 and P3 fleets, SAFE Air's technicians have the capability to fabricate all types of harnesses using laser wire marking and can create looming patterns from original drawings. Comprehensive range of tooling available trained and experienced personnel in Fibre Cable, termination, assembly and test.

Process	Equipment type	Manufactures approvals and standards
Laser Marking of all suitable wire types and sizes : Non-aggressive UV laser marking. Complies with SAE AS50881 Meaning there is no need for insulation integrity testing after marking. The Marking is resistant to hot Hydraulic fluid, fuel and abrasion. No pre or post treatment of wire, identification marks remain clear and legible in service. Fully integrated mark, measure and cut system. Universal Anvil accommodates a full range of wire and cable diameters systems/standards qualifications	Spectrum Technologies "Capris 50MP" http://www.spectrumtech.com/productgroups/wire-marking-	Air Bus AIPS Boeing BAC 5152 Sikorsky Aircraft to SS7333 SAE AS5649-Wire and Cable marking process, UV Laser ASD EN4650- Wire and Cable marking process, UV Laser SAE ARP5607 REVA –Legibility of print on aerospace wires and cables. ASD EN3475 Part 706: Aerospace series. Cables, electrical, aircraft use-laser markability. ASD EN3838 FAR 25- Permanent, NoProcess Equipment Type Manufacturers approvals and Standards

Instruments, Avionics and Electrical systems

SAFE Air's instrument and avionics capabilities include overhaul, servicing and repair to a range of instruments, our list of services in this area include electro-mechanical linear and rotary actuators (AC and DC), generators, engraving and balancing.

On the T56 and J52 engine ignition and electrical system components, we can address the complete ignition system, thermocouple system, harnesses, coordinators and speed sense switches. Our repair services also include all types of motor gearbox driven type units (valves, switches, vane axial fans) and synchro/servo type indicators and transmitters; pressure indicators and transmitters up to 10,000 PSI; and tachometer generators and generators. We also provide bay service on batteries for both lead acid and nickel cadmium types.

WHAT ELSE CAN WE DO FOR YOU?

Planning - times for completion, activities in order to produce a suitably repaired part/aircraft.

Field support – provision of mobile support, whether it's for design, NDT, painting or engineering. SAFE Air personnel regularly visit our customers to provide technical services and support. This saves them time and money as they can seek advice or have work done on the aircraft in situ.

Supply chain and Materials management – sourcing, holding stock, our procurement team work with a range of OEMs, suppliers, and brokers to source parts, particularly for obsolescent aircraft. We have the knowledge and the experience to find those parts that you need and fit them. Through its Supply Chain the company is also able to tap into the resources and expertise of a number of national and international partners with complementary capabilities in manufacturing, component supply and repair services to provide value propositions into global aviation supply chains.

Hazardous fluids supply – Often your aircraft has a range of requirements for hazardous fluids, but only in small quantities. We use a wide range of hazardous fluids as part of the servicing work we do and therefore maintain the fluids you need in suitable warehousing, rotating and using stock quickly which means that it does not go out of date.

Aircraft weighing – We have two Aircraft Weigh Kits; Max weight 50,000lb (22,680 kg) per cell. Accuracy +/- 0.2% two Aircraft Weigh Platform Kits Max Weight 50,000 lb (22,680 kg) per platform Accuracy +/- 0.1%

We're waiting to provide you with the solution to your aviation maintenance requirements

SAFE AIR
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