

RAF flight simulators need breathing air

Market application publication



AIRPACK 2000 offers safe and economic alternative to liquid oxygen breathing systems

While flight simulators can reproduce most flying conditions of military aircraft, they also have an inherent advantage of not requiring 'line servicing between sorties', ie wear and tear of tyres and brakes and replenishment of fuel, lubricants, nitrogen and of course liquid oxygen for the crew breathing air system.

During normal aircraft operations, as oxygen needs to be breathed above 10,000 feet, it follows that any associated physiological discomfort should also be experienced by the pilot in the flight simulator, however, liquid oxygen is not without its handling hazards and expense, so it is not expedient to use in the flight simulators.

The four Shorts Tucano flight simulators at RAF Linton-on-Ouse in Yorkshire, UK are supplied with suitable compressed air breathing air equipment, two Ingersoll Rand compressors and two Parker domnick hunter AIRPACK 2000 regenerative breathing air purifiers with "five stage" air purification.

Each AIRPACK 2000 is pre-filtered by a Parker domnick hunter OIL-X water separator and general purpose filter to provide a continuous flow of breathable compressed air that is free from particulate dusts, vapour, odours, carbon dioxide (CO₂) and carbon monoxide (CO). The air pressure can also be regulated to reproduce similar flow conditions to those experienced from the aircraft liquid oxygen breathing system.

Parker domnick hunter has over 40 years experience of compressed air treatment and has supplied a number of the AIRPACK 2000 Breathing Air Purifiers to other Royal Air Force and Army units for similar duties and also spray painting BA applications.



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Benefits:

- Highest quality breathing air
- Meets international breathing air standards including BS4275: 1997
- Compatible with personal protective equipment (masks, hoses, visors)
- Easily adjustable flow rate
- Operates from a compressed air line – no reliance on air bottles or liquid oxygen systems
- Pneumatic operation
- CO and CO₂ reduction
- Visual and audible warnings of system failure



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Above: Tucano T1 of 1 FTS on landing approach.



Above: External view of Tucano flight simulator.



Above: Front cockpit of Tucano flight simulator.

It is a strange feeling to sit in the cockpit of an aircraft surrounded by a computer screen, operating the controls and yet be almost convinced that you are actually flying a real aircraft. In fact, so good are the Shorts Tucano flight simulators at RAF Linton-on-Ouse, they are used for “full mission” and emergency training as well as general handling exercises.

Everything that the real aircraft can do can be safely reproduced by the four flight simulators, including practising emergency procedures.

Operated and maintained by Thales Training and Simulation, it was commented on “there is no substitute for real experience “but emphasised that flight simulators can give pilots experience of dealing with extraordinary situations...” if anything happens, you have to be prepared.

What’s important is to correlate what happens in the simulator to real life. There may be differences between the two, and we need to understand the correlation”.

No. 1 Flying Training School (1 FTS) at RAF Linton-on-Ouse is split into four units and is equipped with about 72 Shorts Tucano T1 aircraft. Two squadrons train pilots in basic fast jet flying, one squadron trains navigators and a smaller unit provides instructor training. Student pilots fly around 130 hours including 36 simulator hours on the Tucano before progressing to the Hawk T1 aircraft at RAF Valley. It is not surprising that 1 FTS is one of the busiest units in the Royal Air Force. Accumulative simulator time at RAF Linton-on-Ouse is about 3500 sorties per year which is five to six times higher than any other RAF unit, and simulator running costs are approximately 25% of the cost of aircraft operations.