

18 October 2022 **The People's Mosquito – The Wooden Wonder** Ross Sharp Director of Engineering and Airframe Compliance



'The People's Mosquito' is an organisation that plans to return a UK-built Mosquito to UK skies. Although 7,681 aircraft were built, few have remained airworthy, and there are only static examples in Britain. The idea that a Mosquito could be returned to Britain for certification as a flyable example may have seemed unthinkable, but this new organisation is determined to succeed.

It is intended that the aircraft will comply with UK airworthiness requirements and will be registered as a flyable aircraft for air displays.

It is a rare opportunity for people to contribute to such a project that, in due course, will be able to contribute to air shows close to their own homes.

The lecture presented a comprehensive overview of the build requirements, with especial description of the largely wooden airframe structure and associated equipment, systems and facilities.

As the last production Mosquito was rolled-out in 1950, very few organisations can be expected to still have certified staff with the knowledge, skills and facilities to support this unique project. Ross Sharp and his colleagues have scoured the country to determine if there is sufficient capability and knowledge to assist this unique and daunting project.

They succeeded by finding Retrotec Ltd. a company that is able to provide relevant staff and facilities. The company's approvals already meet the project's manufacturing and component requirements. The project also has links to many additional specialists with appropriate approvals.



The original prototype Mosquito now displayed in a British Museum

The presentation incorporated photographs that presented aspects related to the detail of several major items, and provided a very thorough introduction of the aircraft's history. The de Havilland DH98 design met the requirements of government project P13/36 which became a reality when, on Nov 25 1940, it conducted the type's first flight from Hatfield. It was the beginning pf a programme that would fill factories throughout the world, notably Canada and Australia. The last aircraft was rolled out at Broughton in Nov 1950. Now a major Airbus site dedicated to wing production the factory has long been forgotten for its Mosquito heritage, but in more recent time it has revealed information that was believed to be lost, and is now assisting work on "The People's Mosquito."

The Mosquito is an excellent example of how de Havilland designers sought to get the best possible performance from a largely wooden airframe. Its builder de Havilland relied on support from a wide range of engineering specialists, and the current restoration team is set to replicate the procedures they used to meet certification requirements.



Wing rib construction

Having set out to reproduce a largely wooden airframe it is necessary to use appropriate wood, e.g. ash, balsa, birch, cedar, spruce and walnut. However there are also approximately 650 lbs of light alloy castings and forgings in a Mosquito airframe. Many applications are fabricated from aluminium sheet, but other metals, used to create specific components, need to be forged and/or moulded by suppliers.

Photographs showed some applications that highlighted the care taken to attain exceptional performance at the time. Some examples provided a view of what is often easy to overlook, and these drew attention to 'detail' that the construction of the aircraft requires considerable work done by specialist airframe engineers. Large components, such as fuselage and wings, were lightened by using laminated wood sheets For example the wing has two layers of three ply, separated by stringers, on the top surface and a single layer of three ply on the lower surface. There are two spars, with associated wing ribs, and separate wing tips.

Special attention was given to the wing root design. From the fuselage to the engine nacelle on both the port and starboard wings. Between the wing leading edge and the main spar there was an aluminium travelated an

aluminium tray that supported an oil cooler, radiator and a heat exchanger. Within each wing two fuel tanks were behind the spar and on either side of the portion of the engine nacelle that was the main landing gear stowage.

The aircraft has two Rolls Royce Merlin engines and at the time of the presentation the team was close to deciding which engine model, and the most appropriate propellor, will be available and will be suitable.

Although armaments are out of the question, some gun replicas



will be installed in the nose cone, and bomb replicas can be expected, probably within the bomb bay, and visible only when the aircraft is on a static display.

The construction will not be a rebuild but an example of 'remanufacturing.' For this they needed good sources of data and there was a splendid example of how the extensive range over which the team led to some unexpected, and very welcome surprises.



A major resource for the programme was purchased from a company that had constructed three 'modern' Mosquitos in New Zealand. This is a set of wing and tail jigs along with specialist machinery and construction data. These were shipped as cargo to Southampton docks, and now in their hands, allowed contractor Retrotec to commence TPM's UK project.

A serious issue was that piecemeal collection of design drawings had been assembled, but that it was not complete. An engineer at Airbus, Broughton discovered a lot of paperwork that might be of value to the project. It was a complete set of Mosquito production drawings that had been left in an office and were close to being discarded. Numerous filing cabinets yielded 23,000 engineering drawings labelled



New UK built fuselage moulds

material and items, the construction of the People's Mosquito is now closer to being a successful project.

The People's Mosquito team mission is now meeting their overall mission, and is still hoping of success as they aim to fulfill their motto, "Fly, Educate and Remember."

Notes compiled by Mike Hirst

from 1940 to 1960 which had laid dormant ever since. Alongside the cargo from New Zealand this defined a point at which most practical information had been acquired in formats that gave good reason to believe that the most significant technical support issues have been solved. They can be used to develop jigs, and subject to having appropriate access to source