

RAF and synthetic fuel flight

The RAF and Zero Petroleum have won a Guinness World Record for the world's first successful flight using only synthetic fuel.

In a world-first, an Ikarus C42 microlight aircraft flown by Group Captain Peter Hackett, completed a short flight powered by synthetic gasoline at Kemble Airfield, Cotswold Airport, Cirencester, Gloucestershire, England, earlier this month.

Zero Petroleum's synthetic UL91 fuel is manufactured by extracting hydrogen from water and carbon from atmospheric carbon dioxide. Using energy generated from sources such as wind or solar, these are combined to create the synthetic fuel.

This innovation is part of the RAF's Project MARTIN and has the potential to save 80-90% of carbon per flight, supporting the RAF's vision that synthetic fuels will have a major role in powering the fast jets of the future.

Minister for Defence Procurement, Jeremy Quin said: *'This is a world first innovation. It shows the determination of UK Armed Forces to drive forward creative ideas on Net Zero alongside meeting operational commitments.'*

While green technologies such as electric and hydrogen power generation are viable for many RAF platforms, high-performance aircraft require a liquid fuel alternative, for example the UL91, to maintain operational capabilities.

This is the first innovation of many, with a range of research and development activities underway to consider the viability of synthetic fuels without compromising aircraft performance.

Air Chief Marshal Sir Mike Wigston KCB CBE ADC Chief of the Air Staff added: *'Climate change is a transnational challenge which threatens global resilience and our shared security and prosperity.'*

'I am determined to tackle this head on and have set the Royal Air Force the ambitious goal to be Net Zero by 2040. The way we power our aircraft will be a big part of achieving that goal, and this exciting project to make aviation fuel from air and water shows how it might be done.'

'I am delighted at the award of this world record and to see the Royal Air Force yet again at the leading edge of innovation and technology.'

Prior to the ground-breaking flight, the synthetic fuel was tested extensively with CFS Aero. The engine performed as if it were running on fossil fuel but ran at a lower temperature. This means using synthetic fuel could also increase engine lifespan as well as a significant carbon saving.

Paddy Lowe, CEO Zero Petroleum commented: *‘This unique project with the Royal Air Force demonstrates the validity of our synthetic fuel and the potential it has to eliminate fossil CO₂ emissions from a number of difficult but critical sectors, including transport which currently accounts for 23% of the global total.’*

Working towards the UK Government’s Net Zero by 2050 goal, it is understood that the RAF plans for their first Net Zero airbase by 2025, and goal of a Net Zero force by 2040.

A representative from Guinness Book of Records concluded by saying: *‘Guinness World Records would like to offer our congratulations to the RAF and Zero Petroleum Limited on this great achievement.’*

‘We thank them for inviting us to attend and observe this significant event and we look forward to seeing how this will change modern Aeronautics.’

Picture captions

Synthetic fuel 1: *Group Captain Willy Hackett flies the world’s first flight powered by 100% synthetic fuel.*

Synthetic fuel 2: *Second left, Group Captain Peter ‘Willy’ Hackett with, centre, Guinness World Records adjudicator Glenn Pollard after successful completion of the flight.*

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