

From the RAeS photo archives



A line-up of Lockheed F-94B-1-LO Starfires. The F-94 was an interim all-weather fighter produced from the T-33 trainer to fill the gap left by the delayed Northrop F-89 programme. 854 aircraft were built in three versions and they saw service with the USAF and Air National Guard from 1950 to 1959.

Wind tunnels under threat

Along with many other businesses, the Aircraft Research Association (ARA) is having to adapt to an era of much higher energy costs. However, aspects of the changes, and especially the way in which the charges are being calculated, puts at risk one of the longest standing names in the UK aerospace sector.

Founded in 1952, ARA is a non-profit distributing engineering research organisation located in Bedford. As well as providing advanced aerodynamics services to international customers, ARA remains a key capability for UK civil aerospace and defence. Our work is pivotal to many aerospace initiatives and the ARA is a key partner in both the Tempest FCAS project, as well as the greening of civil aerospace as we move towards net zero.

ARA's main wind tunnel involves pushing 19t of air around a closed loop at over 1,000mph, and in doing so uses approximately 15 gigawatt hours of electricity per year but, due to the nature of testing, the usage is far from uniform and peak usage can reach 32MW but often only for hours or even minutes.

The energy supplier's need for a smooth demand has previously resulted in a billing system, the so-called 'Triad' charges, whereby a substantial premium is charged for usage during certain periods. Some customers could avoid energy consumption at these times and hence avoid the charges and so the suppliers are now changing to a system based on peak usage capacity. Recently, and without any consumer involvement or consultation process, the

regulator OFGEM informed ARA that we would be charged under a structure involving a series of standing charges based on peak capability and not usage.

ARA finds itself in the iniquitous situation of having been placed in the highest charge band, alongside steelworks and car manufacturing sites. This is based on our capability to draw high powers despite these uses being of short duration and infrequent – representing only around

1% of the time. The effect on ARA of this change will be that the standing charge amount will increase from around £6,000 pa to well over £1m pa – a 16,000% (ie a 160-fold) increase which it will have to try and absorb alongside soaring unit prices for power.

Lobbying for an exemption has been unsuccessful to date and, despite the efforts of three local MPs, the government's support has been limited to a suggestion from Greg Hands, Energy Minister, in December 2021 that "the ARA will ultimately need to look to pass through costs to its customer." Although aware of this approach, ARA's evidence suggests that in most cases these charges cannot be passed onto customers as worldwide competitors who have significant government funding and more equitable structures for their power charges can maintain significantly lower costs.

This is at a time when new methods of propulsion and experimental configurations for civil aircraft will certainly require wind tunnel testing. Countries, such as China and Turkey investing very heavily in comparable facilities, despite the rise in capability of CFD and digital analysis, clearly makes this point. This situation results in a unique UK

capability being at severe risk despite the backdrop of several statements from the government promising support for cases such as ARA's. These include Boris Johnson stating in the 2021 *Integrated Review of Security, Defence, Development and Foreign Policy* that... "Our first goal is to grow the UK's science and technology power in pursuit of strategic advantage", the Defence Secretary stating... "It is vital that we protect those technologies that will provide us with a decisive edge" and concurrently Jeremy Quin MP, Defence Minister stating that: "In a move away from the policy of 'global competition by default', we will adopt a more strategic and nuanced approach ... to ensure home-grown skills, enterprise and intellectual talents are fully harnessed."

Currently, there is no mechanism by which a company, such as ARA, can be considered by the electrical suppliers as a special case and OFGEM has stated that it is not minded to exempt. Thus, it appears that only through government intervention can the issue be resolved.

I am now calling for the positive words spoken by the government about the importance of UK capabilities to be translated into action and for this key strategic capability to be safeguarded by introduction of a process by which special cases, such as ARA, can be reconsidered and a more equitable charge levied.

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1. *AEROSPACE*, February 2022, p 14, 'The EVTOL bubble?'
2. <https://www.aerosociety.com/news/around-the-world-in-22-years/>
3. *AEROSPACE*, April 2022, p 30, 'The new age of astronauts'
4. *AEROSPACE*, April 2022, p 14, 'Pimp my flight!'
5. <https://www.aerosociety.com/news/seafire-back-in-the-air//>