# Reaction Engines collapses after years of hypersonic innovation amid funding crisis



Richard Varvill reflects with a mix of nostalgia and disappointment on the challenges faced by his long-standing venture, Reaction Engines, renowned for its ambitious attempts to develop a revolutionary aerospace engine. The former chief technology officer describes the emotional turmoil of striving toward groundbreaking technology only to see it unravel, stating, "It was going great until it fell apart."

The genesis of Reaction Engines can be traced back to the Hotol project of the 1980s, which aimed to create a British spaceplane capable of reaching orbit using an innovative airbreathing engine. This endeavour captured the public’s imagination with its promise of maintaining a UK presence in space travel. The hallmark of Hotol was its heat exchanger technology designed to manage the extreme temperatures of over 1,000°C that arise when air is drawn into the engine at hypersonic speeds. Varvill emphasises, "Without cooling, it will melt aluminium... it's literally too hot to handle."

By October 2024, Reaction Engines had managed to bring this pioneering technology closer to operational status, collaborating with both UK and US partners. The company secured funding from the UK Ministry of Defence to support research into hypersonic aircraft in conjunction with Rolls-Royce. However, financial strain became overwhelming, and despite efforts to raise £20 million to avert administration, the company faced an uncertain future.

In September 2024, Reaction Engines revealed that it had previously raised over £150 million but was grappling with escalating losses and missed financial forecasts. Analysts questioned market demand for its pioneering technologies, particularly within the constraints of the UK defence budget. This uncertainty cast a long shadow over the project, culminating in a desperate push for new investment as time ran out.

Despite recent successes, including a 400% increase in commercial revenues, an unsettling trend manifested as two major investors reduced their stakes, further jeopardising the company's stability. As talks progressed with the UAE-backed Strategic Development Fund for potential funding, concerns mounted, and by early November, Reaction Engines entered administration after failing to secure the necessary financial backing. The appointment of PwC as administrator marked a tragic end to a venture that once held so much promise.

In the aftermath, 173 of the company’s 208 employees were made redundant, casting doubt on several ongoing projects, including collaborations with Formula One teams that relied on Reaction's cooling technology and a UK-led military effort aiming to establish reusable hypersonic vehicles. Mr Varvill noted that while Rolls-Royce had initially expressed interest in developing the technology, they ultimately withdrew, citing other priorities, and he lamented, "The UK military has very little money."

This unfortunate turn of events underscores the precarious nature of high-tech ventures in the aerospace sector, where ambitious visions clash with financial realities. The legacy of Reaction Engines may serve as a cautionary tale for other innovative enterprises seeking to navigate the turbulent waters of technological advancement and funding in a challenging economic landscape.

### 📌 Reference Map:

* Paragraph 1 – [[1]](https://www.bbc.co.uk/news/articles/c5y5zg85wnlo), [[4]](https://www.ft.com/content/4dc0145b-c6c3-423d-a22b-2b7f73e1b6a7)
* Paragraph 2 – [[1]](https://www.bbc.co.uk/news/articles/c5y5zg85wnlo), [[2]](https://www.ft.com/content/5aff6abc-3575-47ff-9f1c-9d5ec817c58f), [[5]](https://www.ft.com/content/c7c9e828-2a79-47b3-9a40-93215c39cf7b)
* Paragraph 3 – [[3]](https://en.wikipedia.org/wiki/British_Aerospace_HOTOL), [[6]](https://reactionengines.co.uk/delivering-the-future-of-uk-hypersonic-capabilities/)

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## Bibliography

1. <https://www.bbc.co.uk/news/articles/c5y5zg85wnlo> - Please view link - unable to able to access data
2. <https://www.ft.com/content/5aff6abc-3575-47ff-9f1c-9d5ec817c58f> - In September 2024, Reaction Engines, a British aerospace company, sought to raise £20 million to avoid administration. The company had previously raised over £150 million but faced financial difficulties due to missed forecasts and deepening losses. Their Sabre engine, featuring innovative pre-cooling technology, has potential applications in aerospace and commercial industries. However, questions about market demand and UK defence budget constraints cast uncertainty over the company's future. If funding efforts failed, administration was imminent, with PwC on standby. ([ft.com](https://www.ft.com/content/5aff6abc-3575-47ff-9f1c-9d5ec817c58f?utm_source=openai))
3. <https://en.wikipedia.org/wiki/British_Aerospace_HOTOL> - HOTOL (Horizontal Take-Off and Landing) was a 1980s British design for a single-stage-to-orbit spaceplane, powered by an airbreathing jet engine. Developed by Rolls-Royce and British Aerospace, it aimed to revolutionise space access. The project faced technical challenges and lacked sufficient international support, leading to its cancellation in 1989. This termination led to the formation of Reaction Engines Limited, which pursued the development of Skylon, a proposed spacecraft based on HOTOL technologies. ([en.wikipedia.org](https://en.wikipedia.org/wiki/British_Aerospace_HOTOL?utm_source=openai))
4. <https://www.ft.com/content/4dc0145b-c6c3-423d-a22b-2b7f73e1b6a7> - In October 2024, Reaction Engines, a British technology start-up, urgently sought new financing after two investors significantly reduced their stakes. The company engaged in detailed discussions with the UAE-backed Strategic Development Fund for capital injection. Despite raising over £150 million previously and a 400% increase in commercial revenues, additional funds were necessary to continue operations. PwC was lined up as a potential administrator if funding talks failed. The company's focus was on developing the Sabre engine, which uses innovative pre-cooling technology to enable hypersonic flight. ([ft.com](https://www.ft.com/content/4dc0145b-c6c3-423d-a22b-2b7f73e1b6a7?utm_source=openai))
5. <https://www.ft.com/content/c7c9e828-2a79-47b3-9a40-93215c39cf7b> - In November 2024, Reaction Engines, a British aerospace company with a 35-year history, entered administration after failing to secure new funding for its hypersonic flight technology. PwC was appointed as the administrator, with 173 of the 208 staff made redundant. The collapse posed challenges for Formula One teams using its cooling technology and endangered a UK-led military project for reusable hypersonic vehicles. Despite recent fundraising efforts and discussions with key backers, including the Strategic Development Fund, BAE Systems, and Rolls-Royce, the company could not obtain the needed financial support. ([ft.com](https://www.ft.com/content/c7c9e828-2a79-47b3-9a40-93215c39cf7b?utm_source=openai))
6. <https://reactionengines.co.uk/delivering-the-future-of-uk-hypersonic-capabilities/> - Reaction Engines' novel precooler and SABRE combined-cycle engine technologies are key foundations for the UK's Hypersonic Air Vehicle Experimental (HVX) Programme. In collaboration with Rolls-Royce, the programme is undertaking design work on experimental hypersonic vehicle concepts, including the unveiling of 'Concept V' at the Farnborough International Air Show. The HVX Programme aims to develop breakthrough technologies for hypersonic flight, with plans to expand to include other leading aerospace companies. ([reactionengines.co.uk](https://reactionengines.co.uk/delivering-the-future-of-uk-hypersonic-capabilities/?utm_source=openai))