

HSE science team helps power world-first hydrogen aviation breakthrough

Britain's health and safety regulator is part of a landmark project that could transform air travel, and shows how safety expertise drives innovation, not holds it back.

Scientists at the Health and Safety Executive (HSE) have helped deliver a major milestone in hydrogen-powered flight, in partnership with Rolls-Royce – after the successful test of the first jet engine to reach full take-off power running on 100% hydrogen.

The project was part of a world-first programme of hydrogen aviation research for Rolls-Royce, which demonstrates how Britain's science-led regulatory expertise is helping to unlock the technologies needed to achieve net zero flight.

HSE's specialist team of scientists at its state-of-the-art Science and Research Centre in Buxton worked with Rolls-Royce to design, manufacture and install high-flow, high-pressure hydrogen control and monitoring gas supply infrastructure. The program culminated in the Engine GH2 test – the first time in the world that work of this type has been performed.

At the heart of HSE's contribution was its support for Rolls-Royce's rig test programme. HSE's scientists provided rigorous safety analysis of the test design, combining deep technical knowledge with practical, hands-on experience of safe working with hydrogen in demanding environments. This enabled the programme to move from initial design through to commissioning and live testing at pace, without compromising on safety.

HSE's hydrogen research team has been at the forefront of hydrogen research across multiple sectors for over 20 years. The team has worked with major UK aerospace companies including Airbus and Rolls-Royce, supporting projects that work closely with the Aerospace Technology Institute and directly advance the UK Government's growth agenda.

This programme exemplifies HSE's ambition to enable industry to innovate safely – demonstrating that strong safety foundations are not a barrier to growth, but one of the essential conditions that makes it possible.

Dr Nigel A Moss, Aerospace Sector Manager at HSE's Science and Research Centre, said:

"Safety is always front and centre within the aerospace sector and the development of hydrogen as an alternative to hydrocarbon-based jet fuel presents challenges across many different technical fronts.

"Our team's work here is not about slowing innovation down – it is precisely what enables it to proceed at pace and with confidence. Getting the safety foundations right is what makes breakthroughs like this possible."

Adam Newman, Chief Engineer, Hydrogen Demonstrator Programme, Rolls-Royce, commented:

“This programme has given us the clearest understanding in the industry of how hydrogen behaves in a modern aero gas turbine. Through a collaborative, staged testing approach, we have validated combustion, fuel and control system technologies, and demonstrated the safe use of hydrogen through design, commissioning, maintenance and testing.

“We have explored a wide range of operating conditions, including fault scenarios, enabling operation at maximum power and across a full flight cycle. The pace of delivery has been critical, and the insights gained, many of which are fuel agnostic, will now be applied across our future programmes, including UltraFan®, strengthening our confidence that the gas turbine will remain at the forefront of sustainable aviation’s future.”

Further Information

- The Health and Safety Executive (HSE) is Britain’s national regulator for workplace health and safety. We are dedicated to protecting people and places and helping everyone lead safer and healthier lives.
- HSE’s Science and Research Centre is based in Buxton, Derbyshire. It is a world-leading centre for applied science, engineering and research in health and safety.
- Rolls-Royce plc is a world-leading industrial technology company. Its aerospace division develops and manufactures power and propulsion systems for civil and defence aviation.

[Construction company fined after joiner suffers life-changing injuries in skylight fall](#)

Construction company fined after joiner suffers life-changing injuries in skylight fall

- Joiner suffered a complete spinal cord injury after falling through an unsecured skylight opening.
- Principal contractor failed to properly plan, manage and monitor the roof work.
- Worker found by his son, the only other person present on site.

A mechanical and engineering construction company based in Manchester has been fined after a joiner suffered life-changing injuries when he fell through a skylight opening while carrying out work on a domestic property in Altrincham.

Adam Kirkpatrick had been subcontracted by JLM Solutions Limited to construct the timber frame for a new roof. On 22 November 2023, the 53-year-old was walking across a piece of plyboard that had been placed over roof light openings in the roof structure. The board had not been secured and gave way beneath him, causing him to fall from height.

Mr Kirkpatrick's son was the only other person present on site at the time of the incident, after the rest of the workforce had left for the day. He called an ambulance, and Mr Kirkpatrick was taken to hospital, where he was found to have suffered multiple injuries including a head injury, fractured ribs, a fractured sternum and a complete spinal cord injury. He is now paralysed from the waist down.



Work area where the incident occurred

He said: "I have worked in the construction industry since leaving school. I loved my job.

"I have always been able to provide for my family. Before the accident my wife had gone part time and we were making plans for retirement and spending more time with our grandchildren. This all changed due to the accident.

"It has gone from me being provider for the family to having to rely on other people.

"This accident has impacted my health. I have no feeling below my belly button, I suffer with severe nerve pain and have to self-catheter.

"Only for the NHS I wouldn't be here today – they have saved my life."

Mr Kirkpatrick's wife Julie said: "On the day I was told that Adam would never walk again our world was turned upside down.

"Adam just loved to work. He lived for what he did and did it all for his family.

"It breaks my heart that Adam will never chase after his grandchildren again.

He will never be able to play football with the boys or dance with his granddaughter. Everything my husband worked so hard for was to enjoy retirement and spend time with his grandchildren. That dream has been shattered since the accident.”

An investigation by the Health and Safety Executive (HSE) found that JLM Solutions Limited, acting as the principal contractor, failed to properly plan, manage and monitor the roof work. The company did not ensure suitable measures and equipment were in place to prevent or protect against falls from height and there was a lack of adequate site supervision during the work.

HSE guidance states that good management of health and safety in construction is crucial to the successful delivery of a construction project and principal contractors have an important role in managing the risks of construction work.

Principal contractors must plan, manage and monitor the construction phase and ensure subcontractors have effective preventative and protective measures in place, alongside appropriate supervision, Guidance on health and safety management in construction can be found here: [Managing health and safety in construction. Construction \(Design and Management\) Regulations 2015. Guidance on regulations L153](#)

HSE also has detailed guidance on how to plan and carry out work at height safely which highlights the important of using suitable work equipment and implementing effective control measures to prevent falls available here: [Health and safety in roof work.](#)

JLM Solutions Limited, of Elliott Street, Manchester, pleaded guilty to breaching Regulation 13(1) of the Construction (Design and Management) Regulations 2015. The company was fined £8,000 and ordered to pay costs of £5,850 and a victim surcharge of £2,000 at Warrington Magistrates’ Court on 26 May 2026.

HSE Inspector Karen Farley said: “Falls from height remain one of the leading causes of workplace death and serious injury. The risks are well known throughout the construction industry.

“This prosecution highlights the importance of properly managing work at height activities. Had suitable control measures been implemented, such as a safe working platform combined with appropriate supervision, this incident would not have occurred and Mr Kirkpatrick would not have sustained these significant life-changing injuries.”

This HSE prosecution was brought by HSE enforcement lawyer Matthew Reynolds and paralegal officer Benjamin Stobbart.

Further information:

1. [The Health and Safety Executive](#) (HSE) is Britain’s national regulator for workplace health and safety. We are dedicated to protecting people and places, and helping everyone lead safer and healthier lives.
2. More information about the [legislation](#) referred to in this case is

available.

3. Further details on the latest [HSE news releases](#) is available.
 4. Relevant guidance can be found here [Work at height – HSE](#)
 5. HSE does not pass sentences, set guidelines or collect any fines imposed. Relevant sentencing guidelines must be followed unless the court is satisfied that it would be contrary to the interests of justice to do so. The sentencing guidelines for health and safety offences can be found [here](#).
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Shipping company fined £146,700 after worker seriously injured by forklift truck

- Streamline Shipping Agencies Limited has been fined after a yard operative was struck by a forklift truck at its Aberdeen Harbour premises.
- An HSE investigation found the company failed to ensure adequate separation between pedestrians and vehicles during loading and unloading operations.

A shipping company based in Aberdeen has been fined after an employee suffered serious and life-changing injuries when he was struck by a forklift truck at the company's yard.

A 43-year-old man was working at Streamline Shipping Agencies Limited's premises at Palmerston Quay, Aberdeen, when he was struck by a reversing forklift truck driven by a colleague on 26 September 2024. The worker was on foot, unclipping the curtain side of an articulated trailer, when the rear nearside wheel of the forklift made contact with his right leg, pulling him to the ground.

The worker suffered multiple fractures to his right foot and lower leg, as well as a de-gloving injury, undergoing two surgical procedures and skin grafts. He has also required counselling because of the incident and has yet to return to work.



An image of the incident location taken shortly before the Improvement Notice was served. The image illustrates the issues relating to pedestrian and vehicle movement within the area.

An investigation by the Health and Safety Executive (HSE) found that Streamline Shipping Agencies Limited failed to ensure its workplace was organised in such a way that pedestrians and vehicles could circulate safely. While the company had a traffic management plan in place, it lacked the necessary detail to ensure that loading and unloading – which routinely took place concurrently in the same area – could be carried out safely without putting employees on foot at risk from moving vehicles.

HSE concluded it was reasonably foreseeable that an employee on foot faced a risk of being struck by a moving vehicle when both the pedestrian and driver were concentrating on their respective tasks near each other.

Following the investigation, an Improvement Notice was served on the company. In response, Streamline made a series of improvements to its traffic management arrangements to the satisfaction of HSE.

By law, employers must ensure traffic routes can be used without putting workers at risk. [Guidance on managing vehicle movements](#) in the workplace is available on the HSE website.

Streamline Shipping Agencies Limited, of Streamline Terminal, Blaikies Quay, Aberdeen, AB11 5PU, pleaded guilty to breaching Regulation 17(1) of the Workplace (Health, Safety and Welfare) Regulations 1992 and Section 33(1)(c) of the Health and Safety at Work etc. Act 1974.

The company was fined £146,700 and ordered to pay a Victim Surcharge of £11,000 at Aberdeen Sheriff Court on 22 May 2026.

HSE Inspector Nicky Smith said:

“This was a serious and wholly avoidable incident that has had a profound and lasting impact on this worker’s life.

“Employers have a legal duty to ensure that pedestrians and vehicles can move safely within their workplaces, particularly in busy areas where loading and unloading takes place.

“Having a traffic management plan is not enough if it does not contain the detail needed to protect workers on the ground.

“We will not hesitate to hold companies to account when they fall short of their obligations.”

Further Information

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3. Further details on the latest HSE news releases is available.
4. Relevant guidance can be found here: [Transport safety in waste and recycling – HSE](#)
5. HSE does not pass sentences, set guidelines or collect any fines imposed. Relevant sentencing guidelines must be followed unless the court is satisfied that it would be contrary to the interests of justice to do so. The sentencing guidelines for health and safety offences in Scotland can be found [here](#).

[Waste and recycling company fined after worker death](#)

- Stuart Garnet, 44, was fatally struck by a reversing telehandler at a Cumbria-based waste and recycling company
- An HSE investigation found H. Wicks (Lindal) Limited failed to ensure pedestrians and vehicles could circulate safely on site

A waste and recycling company in Cumbria has been fined £60,000 after an employee was hit and killed by a reversing telehandler in Barrow-in-Furness.

Stuart Garnet, 44, was working at H. Wicks (Lindal) Limited's waste and recycling facility when he was struck by a reversing telehandler on 12 May 2022. He subsequently died of his injuries.

An investigation by the Health and Safety Executive (HSE) found that H. Wicks (Lindal) Limited failed to ensure the site was organised in such a way that pedestrians and vehicles could circulate in a safe manner.

By law, employers must ensure traffic routes can be used without putting workers at risk. [Guidance on managing vehicle movements](#) in the workplace is available on the HSE website.

H. Wicks (Lindal) Limited, of Scarth Road, Sowerby Woods Business Park, Barrow-in-Furness, Cumbria, pleaded guilty to breaching Section 2(1) of the Health and Safety at Work etc. Act 1974.

The company was fined £60,000 and ordered to pay costs of £6,624.75 at Warrington Magistrates' Court on 26 May 2026. A statutory surcharge of £2,000 was also imposed.

HSE Principal Inspector Caroline Shorrocks said:

"Stuart Garnet's death was an avoidable tragedy, and our thoughts are with his friends and family.

"Every year, a significant number of workplace accidents, many of them serious and sometimes fatal, occur because of poor separation of pedestrians and vehicles.

"Had the company implemented suitable separation measures, this fatal injury would not have occurred. The fine imposed on H. Wicks (Lindal) Limited should serve as a clear reminder to everyone in the waste and recycling industry that HSE will hold to account those who fail to keep their workers safe."

This HSE prosecution was brought by HSE enforcement lawyer Matthew Reynolds and paralegal officer Henrietta Ruthven.

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[Worker burned after Shell safety failures triggered violent propane release at Firth of Forth terminal](#)

- The incident occurred in the early hours of 1 November 2018 at Braefoot Bay Marine Terminal, Firth of Forth, Fife.
- Flammable vapour cloud have resulted in a catastrophic explosion if ignited
- Vladimir Volkov was treated at hospital and subsequently repatriated to Russia, where he received further treatment. He is understood to have returned to work.

A ship's engineer suffered serious cold burns after Shell UK's flawed safety procedures led to a violent release of liquid propane during loading operations at a Firth of Forth marine terminal, a Health and Safety Executive investigation has found.

Vladimir Volkov, a gas engineer aboard the tanker MV Symi, sustained cold burns to 10–13% of his body surface after liquid propane was released without warning at Shell's Braefoot Bay Marine Terminal near Dalgety Bay, Fife, in the early hours of 1 November 2018.



Braefoot Bay Marine Terminal

The incident, which created a rapidly expanding flammable vapour cloud that enveloped workers on both the ship's deck and the adjacent jetty, could have resulted in a catastrophic explosion if the cloud had found an ignition source .

HSE's investigation was carried out by inspectors and specialists in its Chemical, Explosives, and Microbiological Hazards division – reflecting the large quantities of dangerous substances handled at the site.

How it happened

The release was triggered when a Shell technician accidentally pressed a button on a remote-control handset, causing a loading arm quick release coupling to disconnect from the ship's manifold before the arm had been fully cleared of propane. An estimated 250–300 kilograms of liquid propane was released at pressure in a matter of seconds.

HSE investigators established that Shell's own operating procedure – which required a critical safety mechanism known as an emergency release coupling to be disarmed before the arm had been fully purged and drained – directly contradicted the guidance provided by the loading arm manufacturer. It also contradicted procedures prepared by a third party involved in the installation of the equipment.



The incident happened at Braefoot Bay Marine Terminal

The failings Shell should have caught

The HSE investigation identified two significant underlying failings.

First, Shell's system of work was unsafe. The operating procedure in place at the time required workers to disarm the emergency release coupling too early in the disconnect sequence – before the loading arm was fully cleared of product. This left a dangerous window in which an accidental button press could, and did, cause a sudden propane release.

Second, Shell's management of change process was wholly inadequate. When the company replaced all four of its marine loading arms in 2018 – upgrading to new equipment from a different manufacturer that operated differently, including via wireless remote control and with a quick release coupling – it treated the project as a straightforward “like for like replacement.” It was not.

Shell failed to conduct a full risk assessment of the new loading operation. The new arms introduced a remote-control handset with exposed coupling buttons on its side, a feature that had not existed on the previous equipment. No consideration was given to basic protective measures such as fitting interlocks to prevent the coupling from opening while propane was still present, or simply shrouding the buttons to prevent accidental activation.

Following its own post-incident review – prompted by an Improvement Notice served by HSE – Shell identified that a coupling interlock was both

technically feasible and reasonably practicable. That system could have prevented the incident entirely.

The broader risk

The vapour cloud produced by the release extended the full length of the ship and across the jetty, reaching down to the surface of the sea. It was registered by gas detection monitors 20 metres away. Propane vapour is heavier than air, highly flammable, and capable of travelling significant distances to find an ignition source. Had the cloud ignited, those in the immediate vicinity would have faced significant risk to their lives.

Shell UK Limited pleaded guilty to breaching The Control of Major Accident Hazards Regulations 2015, Regulation 5(1) and the Health and Safety at Work etc. Act 1974, Section 33(1)(c). The company was fined £450,000 at Kirkcaldy Sheriff Court on 26 May 2026.

HSE principal specialist inspector Euan Ross said:

“Shell had adapted procedures from its old equipment and applied them to a new and fundamentally different system, without carrying out adequate safety checks.

“While the injuries sustained were serious enough, this could have been a far more catastrophic event.

“We will not hesitate to take action against companies which fail to do all that they should to keep people safe.”

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