



# Two Hydrogen Refuels. Two Locations.

PIONEER HRS CASE STUDY

## Industry

Heavy-Duty Transportation

## Application

StreetDeck Hydroliner  
Double Deck Bus

## Customer

INEOS - Wrightbus

## Requirement

Hydrogen refuelling at  
two locations



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# Pioneer Refuels World-First Hydrogen Double-Deck Bus

Wrightbus, a developer of zero emission heavy-duty vehicles, sought out NanoSUN's mobile Pioneer Hydrogen Refuelling Station to deliver hydrogen refuelling to its world-first, hydrogen double-deck bus.

Scheduled to carry out the UK's first Hydrogen Roadshow on the lead up to the United Nations Climate Change Summit COP26, Wrightbus required a hydrogen refuelling solution that would provide its double-deck bus with two hydrogen refuels at two different locations on the same day.

## **The Customer - Wrightbus: StreetDeck Hydroliner**

Wrightbus is a UK transport manufacturer established in 1964. Leading the way in developing zero-emission vehicles its aim is to drive the industry into a new era of energy efficient transport with its fuel cell vehicles.

Wrightbus has recently introduced the world's first hydrogen powered double-deck bus: the StreetDeck Hydroliner. Developed as part of

the JIVE project funded by the European Union (Joint Initiative for Hydrogen Vehicles across Europe) the Hydroliner leaves water as its only by-product, presenting an eco-friendly vehicle powered by renewable energy.

Wrightbus believes that hydrogen buses represent the future of the public transport industry and as the popularity of hydrogen buses grows, there will be a surge in manufacturing to support hydrogen as a clean and sustainable fuel of the future.



## The Challenge – Limited Access to Hydrogen Refuelling

In collaboration with INEOS and Ryze Hydrogen, Wrightbus prepared to launch the UK's first Hydrogen Roadshow and unveil its StreetDeck Hydroliner at COP26.

To highlight the crucial role hydrogen is playing in decarbonising transport, the StreetDeck Hydroliner planned to travel from London, UK, to Glasgow, Scotland, making numerous visits to partner businesses across the nation.

Equipped with a hydrogen fuel cell powertrain that allows the bus to travel up to 250 miles, the Hydroliner would need to undergo several hydrogen refuels during its journey in order to reach its final destination.

To achieve this, the INEOS/Wrightbus team required hydrogen refuelling stations to be available at separate locations to refuel its StreetDeck Hydroliner on route from London to Glasgow.

However, the lack of fixed hydrogen refuelling stations situated across the UK significantly limited access to hydrogen fuel, highlighting a challenge in demonstrating the Hydroliner and carrying out the roadshow.

## Why NanoSUN's Mobile Pioneer Hydrogen Refuelling Station?

NanoSUN's mobile Pioneer Hydrogen refuelling Station (HRS) is a fully mobile, self-contained, automated refuelling solution that offers an affordable way of delivering transportation-grade hydrogen directly to the point of use, where it is dispensed into hydrogen powered vehicles efficiently, safely and fast.

The system's ability to provide volume hydrogen storage, hydrogen transportation and hydrogen dispensing, all in a single easy to use package at any desired location, presents the answer to mobile and in-field refuelling.

The Pioneer is specifically designed to facilitate hydrogen mobility and rapid, low-cost deployment of the support infrastructure needed to overcome the lack of fixed hydrogen refuelling stations and encourage the adoption of heavy-duty hydrogen vehicles such as buses.



## How Did The Pioneer Overcome The Challenge?

Due to limited fixed hydrogen refuelling stations currently available in the UK, there were no nearby access to fuel sources during the second leg of the Hydroliner's planned UK roadshow: this being across the North West of England and the lowlands of Scotland. Wrightbus therefore required a mobile refuelling solution that could be available at convenient locations.

NanoSUN's Pioneer HRS was selected to carry out two hydrogen refuels to the StreetDeck Hydroliner at two chosen locations on route to Glasgow: one at NanoSUN's Green Hydrogen Farm in Lancaster and one at a Sutton Tanker's site in Scotland.

Following the journey from London, the Hydroliner arrived at the initial refuel site at NanoSUN's headquarters in Lancaster, where the Pioneer was prepared and ready to deliver an on-site refuel. Utilising the systems innovative 9-bank cascade refuelling ability, the Pioneer carried out a rapid hydrogen refuel of the bus's hydrogen storage cylinders.

Upon completion of the refuel, the NanoSUN team quickly decommissioned the Pioneer with minimum complexity and travelled to the next refuelling point. With no on-site power facilities needed, the Pioneer quickly performed another high pressure refuel of the Hydroliner enabling the bus to complete the final leg of its journey and arrive at its destination on the same day.



The logo for Pioneer, featuring the word "Pioneer" in a green, sans-serif font. The letter "P" is stylized with a white outline and a green shadow, and the letter "i" has a white dot and a green shadow. A green swoosh underline is positioned below the text.

### The Results

NanoSUN successfully project managed and delivered a fully mobile hydrogen refuelling solution to Wrightbus, in line with the roadshow's specific refuelling and location requirements.



The successful completion of the project highlighted the Pioneer Hydrogen Refuelling Station's capabilities:


- Rapid hydrogen refuelling
- Mobile nature: hydrogen storage, distribution and dispensing at any location
- Rapid deployment
- No need for on-site power facilities
- Simple, intuitive and easy to use design



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