



Hydrogen Refuelling Roadshow

PIONEER HRS CASE STUDY

Industry

Heavy-Duty Transportation & Equipment

Application

Hydrogen Buses
Hydrogen Forklift Trucks
Hydrogen Refuse Vehicles

Customer

Westfalen Group

Requirement

Hydrogen Refuelling
Demonstrations



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Westfalen Demo Mobile Pioneer on German Roadshow

Westfalen Group managed and operated NanoSUN's Pioneer Mobile Hydrogen Refuelling Station at a number of different demonstration deployments across Germany, supplying hydrogen refuelling to warehouse-based material handling vehicles through to road going municipal trucks.

Deploying the mobile hydrogen refuelling unit across the European market in the summer of 2021, Westfalen showcased the Pioneer's ability to deliver a combined hydrogen solution to meet the needs of hydrogen users. This highlighting the Pioneer's fully integrated hydrogen storage, transportation and dispensing solution, as the missing element needed to facilitate the rapid introduction of hydrogen vehicle fleets.

The Customer - Westfalen

Westfalen Group is an energy sector technology company operating with numerous subsidiaries and associates in Germany, Belgium, France, the Netherlands, Austria, Poland and Switzerland.

The family business, founded in 1923, has over 20 production sites across Europe and is headquartered in Münster. Its business sectors

are gases, energy supply and service stations. With almost 1,800 employees, Westfalen Group posted sales of around 1.6 billion euros in the 2020 financial year.

With around 260 refuelling stations, Westfalen Group has the largest network of group-independent branded gas stations in Germany, offering alternative energies, such as LPG, charging current and most recently hydrogen.



The Challenge – Speed and Deployment of Hydrogen

The UK/EU has seen a significant growth within the hydrogen industry over recent years, particularly within the transport sector. However, there is still a significant issue with the speed of deployment.

As a growing number of end user fleets look to switch to hydrogen fuel for zero emission operation, initial deployments are proving to be a challenge. Small path finder fleets running just a handful of vehicles, ahead of larger scale deployments, are unable to justify the time and cost of full fixed

hydrogen refuelling stations. Hydrogen fuel is therefore currently struggling to compete, with only ~120 fixed refilling stations located across Europe at present.

A company with expertise and experience in gases and mobility, Westfalen was looking for the missing component to delivering introductory, German, vehicle fleet operators with a flexible and low-cost hydrogen refuelling solution.

The solution would be required to assist the business in accelerating the development of a widely available network of hydrogen refuelling points.

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 trucks, buses, vans and material handling equipment.



How Did The Pioneer Overcome The Challenge?

During the summer of 2021, the Pioneer undertook over 10 trials across Germany to demonstrate hydrogen refuelling without the need for a power supply and the delivery of fast vehicle refuelling with no requirement for an on-site compressor. This emphasising the Pioneer's ability to be rapidly deployed and redeployed to any location; offering a low-cost path to delivery of transportation grade fuel directly to the point of use.

In an effort to highlight hydrogen as a vital element for the future of zero emission mobility and transportation, the Pioneer HRS was selected by Westfalen to tour the country and demonstrate the vital role hydrogen will play in decarbonising heavy-duty vehicles and equipment.

Showcased during prestigious events such as IAA Mobility in Munich and at Hyvent in Münster, The Pioneer was also utilised to provide visitors with the opportunity to see innovative refuelling technology in the world's effort to reach net zero.

“After successful demonstration of the Pioneer's capabilities during our roadshow in summer, we are looking forward to deploying this safe, reliable and affordable hydrogen refuelling solution to our customers. Together with NanoSUN we are able to present the missing piece of the puzzle to bring hydrogen refuelling up to speed”

Andreas Weisheit
Head of Gases Division
at Westfalen.



Pioneer

The Results

NanoSUN closely collaborated with Westfalen Group to manage and deliver a successful roadshow of demonstrations for a number of vehicle deployments across Germany, resulting in Westfalen placing a significant order for multiple Pioneer HRS.

Having identified the Pioneer as a reliable and integral component to delivering hydrogen fuel to the downstream user, Westfalen Group will look to offer purchased Pioneers to customers, whilst also directly operating stations itself to offer hydrogen as a service.



The successful completion of the project highlighted the Pioneer Hydrogen Refuelling Stations 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



Are **you** looking
to introduce
a **hydrogen**
vehicle fleet or
equipment?



Find out more about Pioneer

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