Interreg North-West Europe HECTOR
European Regional Development Fund

METROPOLE RUHR AGR GRUPPE

HECTOR Project
Partner report AGR Herten

‘Hydrogen waste collection vehicles in North West Europe’

25th October 2023

Project Conclusions

- HECTOR is the start point for AGR's hydrogen strategy.
  AGR's goal is to contribute to the decarbonisation of (waste collection) logistics. During the project period of the HECTOR project AGR commissioned a hydrogen filling station and hydrogen production (440,000 kg/H2 per year). The filling station will be public (opening end of 2023). AGR has also purchased H2 cars and vans.
- AGR used the knowledge of the fleet managers combined with project management experience and built up its own skills and networks to accompany the project (cooperation with the Westphalian University of Applied Sciences in Gelsenkirchen, H2 Network Ruhr, etc.).
- On this basis AGR was able to draw up a specification for a hydrogen front loader, which was put out to public tender.

The truck and a lot of experiences are the result of the HECTOR project.

Operational Experiences

Positives:

- Positive is the quietness of the truck.
- If the truck is running, it is pleasant to drive.
- Vehicle raises public interest; passers-by ask the drivers about the vehicle.

Issues:

- Problems with the electric motor (exchange was necessary)
- Problems with the fuel cell (Air filter was closed and air supply was not working properly, so filter was damaged and dusty air was sucked in; fuel cell was damaged)
- Delivery of spare parts often takes a long time (several months)
- Electric motor has not the same power as diesel truck (slows down at hills)

Barriers:

- Few suppliers of hydrogen waste collection vehicles on the market.
- Special requirements can be made by converting a diesel vehicle to a hydrogen vehicle; this makes each vehicle unique (transfer of experience difficult).

Lessons Learned

- The hydrogen consumption is higher than expected; depending on hydrogen and diesel price, the hydrogen front loader is more expensive.
- Refuelling infrastructure is a limiting factor (distance).
- Reliability is lower than compared to a diesel truck
- No workshop infrastructure exists; the supplier has to carry out repairs and maintenance (disadvantageous if the supplier is not located nearby).
- The technical conception of the fuel cell and battery must be well coordinated, otherwise there will be standstill times during the tour because the battery has to be recharged.
- The availability of spare parts leads to long standstill times; a complete replacement of a diesel vehicle is therefore not possible.
- Purchase price for an H2 truck is three times as high as for a diesel truck.
- Hardly any series production of H2 trucks (waste collection vehicles) so far.
- Conversion of diesel vehicles works, but leads to dependence on the supplier for maintenance and repair (problematic if the manufacturer's headquarter is far away).

Collaboration with Partners and Emerged Relationships

- Exchange of experiences has improved the understanding of the problems with the production and delivery of the H2 truck.
- Questions on safety requirements for depots and implementation were very helpful (AGR decided to park the vehicle outside, like all diesel vehicles).
- Exchanges on suitable suppliers of hydrogen waste collection vehicles and market development were helpful.

Comms

- e:Motion in Herten at 19/09/2021: exhibition for new mobility informed about current mobility trends, from the latest e-bikes to hydrogen cars. Special highlight: The first "Hydrogen Mobility Day" of the project "HyExperts Region Emscher-Lippe" with expert presentations on the future topic of hydrogen.

- IFAT in Munich at 30.05.-03/06/2022: World's Leading Trade Fair for Water, Sewage, Waste and Raw Materials Management, 2.984 exhibitors and around 119,000 visitors confirmed the fair as the most important platform for environmental technologies. Presentation of H2 front loader at exhibition site of Terberg Group (manufacturer of body).

- Distribution of the film on the internet 04_AGR 15er_T-JR_FAU_10.11.2022.mp4 (sharepoint.de)

The Future for your HECTOR Truck

- Gaining long-term experience in daily use in the collection area
- Gaining more experience on availability / liability, experience in maintenance and service
- Observation of wear performance in comparison to diesel vehicles
- Analysis of hydrogen consumption compared to diesel consumption of conventional trucks; Analysis of total energy consumption

- AGR will follow the market; currently the price/performance ratio is not feasible without subsidies.