



Experiences and results LIFE demonstration @Stadwerke Hürth, near Cologne

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30th of March

LIFE 'N Grab HY! project

**Experiences and results LIFE demonstration
@Stadwerke Hürth, near Cologne**



Stadtwerke Hürth

Organisation

- Stadtwerke Hürth, are the technical service providers for the citizens of the Hürth municipality.
- SWH deliver a wide range of supply and disposal services to over 59,000 people.
- Service provider in the areas of:
 - Watersupply
 - District heating
 - Drainage / sewage
 - Roads and maintenance
 - City services, **waste collection** and city cleaning
 - Green/public space maintenance
 - Hürth public transport (Buses)
- The work performed is economically oriented. This also includes questioning the meaningfulness of the tasks, carrying out profitability analyzes and reducing the administrative effort. This is the only way we can offer you the best price
- Great importance to a good working atmosphere in the company
- Environmentally driven and future orientated
- NEWS: Now also energy supplier in the region



Why the LIFE demonstration

- Experiences with hydrogen buses in daily operation
- Experience with own refuelingstation
- Due to exceeding values of NO₂, a clean air plan is in the making, making Hürth a low emission zone and therefore restricting SWH.
- Looking for alternatives
- As a waste collection operator new developments are always to be tested
- Impact for the operator and maintenance
- Trucks “only from hear-say”
- “Now we can test it in real life!”



Stadtwerke Hürth

Demonstration

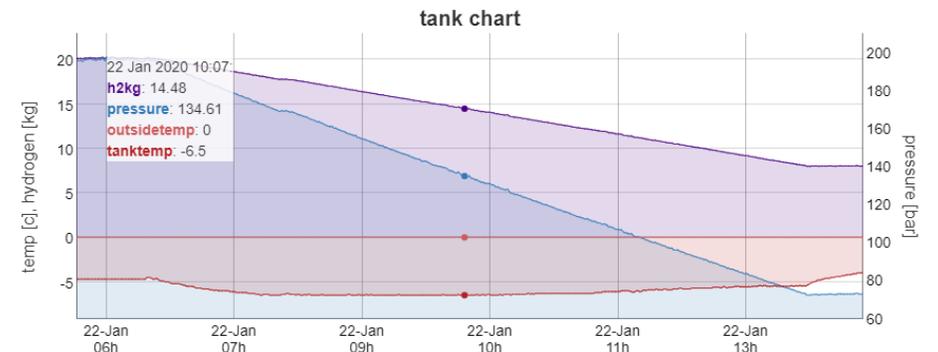
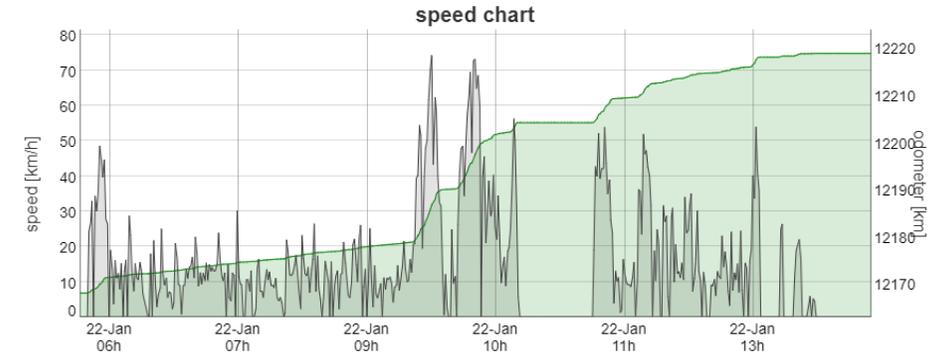
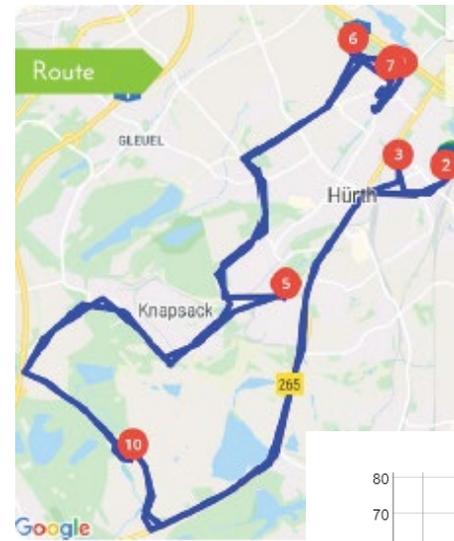
- One Hydrogen electric hybrid truck (Baetsen demonstrator) in operation for 2 weeks
- Regular residual waste routes
 - Inncity collection – unloading at the waste depot/ environmental park – Inncity collection – last unloading – end of shift.
- Daily 06:30 – 15:30h routine
- Using the HyCologne Hydrogen refueling station on the Knappsack Industriepark after the last unloading.



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Experience

- Operated in winter circumstances: 15/1/2020 – 29/1/2020
- 14 days of operation, no weekend -> 8 day operation
- Collecting containers as expected, like a diesel
- More comfort, less vibrations
- Improvement in sustainability (LEZ allowance)
- Noise reduction
- A lot of hills and slopes in the area, which impacts the vehicles speed
- Also the power consumption is very high, draining the battery before the FC can recharge these



Day of operation 22/1/2020 in Hürth



Demonstration movie
on:
[www.lifeandgrabhy.eu/
demonstartions](http://www.lifeandgrabhy.eu/demonstartions)



Stadtwerke Hürth



Lessons learned

- It is possible to collect waste in the Hürth region was with zero- emissions and meet future restrictions in the city
- Easy and fast refueling
- Fleet of current trucks consisting of 7 backloader vehicles and one long haul truck, could be converted to hydrogen. (Batteries for now insufficient)
- The truck is comfortable but needs to be one with a Low entry cabine, for the overview and health and safety requirements/ regulations in Germany
- The truck is underpowered in the current version
- Current Fuel cell can't keep up with the large consumption in this area

Conclusions



Geographical differences....

- The truck and compactor works fine, operation is more relax.
- As is, not designed for the region of Hürth
- Larger FC needed, to faster recharge batteries
- Higher power output driveline / Electric motor to be able to cope with hills and slopes when loaded.
- SWH keeps following the hydrogen projects and will make a choice for their fleet when the economics also work.

The local results (flyer)

- 2 weeks, 8 days of operation
- Distance covered 431 kms
- 6 Refuelings
- Refueled 98,31 kgs of hydrogen

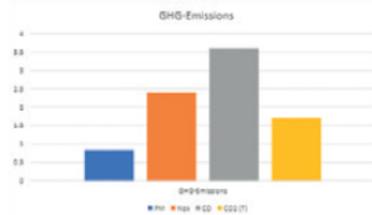
Green house gases saved:

During this short demonstration in the municipality of Hürth, the truck was able to reduce Green House Gas-Emissions¹.

GHG-Emissions ²			
PM	NOx	CO	CO2
0,83 kgs	2,4 kgs	3,6 kgs	1,7 Tons

¹ Tank to wheel emissions have been taken into account.

² kgs of GHG saved compared to EURO 3 Diesel (compared to 2014 at project start)



Demonstration of the garbage truck on hydrogen at the Stadtwerke in Hürth (Germany)

January 2020

The truck is owned by waste collection company Baetsen

In January 2020 a 2 weeks demonstration of the garbage truck on hydrogen, owned by Baetsen, took place in the city of Hürth, a municipality south of Cologne. The Stadtwerke Hürth, that co-owns the hydrogen refuelling station on the Knapsack Industrial plant for buses, was very interested in starting a demonstration with a hydrogen garbage truck. After their experience with buses, they wanted to experience the potential of these trucks, because they are also responsible for the municipality's waste collection. They want to contribute to a more environmentally friendly waste collection in the future.

Results

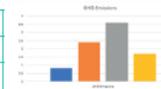
During its 2 weeks operation of the hydrogen garbage truck covered 431 kms in the daily operation. It collected residual waste in mini containers, operating in a period of 8 operational days within the 14 days timeframe.

Impact

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Comfort

Beside the reduction of green house gas emissions, the vehicle operated with lower noise emissions (-4Db in comparison to a standard diesel operated vehicle), leading to better working conditions.

The most noticeable and positive effect for the drivers and loaders working on the back of the waste collection vehicle, resulting from the interviews held with the people that operated the vehicle, was the lower noise level of the truck. They were more relaxed and less tired after a day's work.

Driver: "It's more relaxed to drive this truck during a full day of operation, although it is not a low-entry cabine"

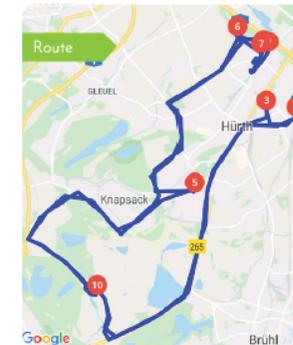
Loader: "You really notice the difference in noise emissions and the tailpipe emissions compared to our diesel operated truck, which are loud and smelly"

The general public also noticed and mentioned, that less noise was emitted to the surrounding environment by the truck passing by in the streets.



Refuelling:

During the demonstration period the vehicle refueled a total of 98,19 kgs of hydrogen in 6 refuelling events.



Conclusion

Although the truck is not designed for the specific local conditions in Hürth (f.e. hills), it was a great opportunity for the organisation to learn more about hydrogen technology and to gain experience in driving this hydrogen garbage truck with low noise and zero-emissions.

Stadtwerke Hürth sees a future for hydrogen in their fleet, especially when the truck (originally designed for flat areas) will be adapted to the hilly local situation.

Made possible by.....



We want to thank

- **Stadtwerke Hürth** for their participation and flexibility
- **Dr. Dirk Ahrens-Salzsieder** at that time chairman of the board of directors of SWH (Retired)
- **HyCologne** for their cooperation and the availability at their refuelingstation
- ***The Mayor of Hürth Dirk Breuer*** for inaugurating the demonstration
- But mainly **the drivers and loaders** that safely operated the vehicle during the demonstartion!

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Bedankt voor uw aandacht!
Thank you for your attention!



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