



25TH ITS WORLD CONGRESS
COPENHAGEN
17 – 21 SEPTEMBER 2018

Quality of life

Key Takeaways

- ITS and automated vehicles will bring major changes to our transport systems
- New technology offers large potentials regarding safety and efficiency, however, risks regarding travel volume and environmental impacts need to be considered
- We have to take advantage of the changes that are coming now and show people the real costs of driving alone compared to new alternative solutions to reduce the use of private cars
- Integration of public transit and first/last-mile services and shuttles is key to make public transit more attractive and increase its use
- ITS solutions can be used to regulate traffic flow and make non-motorized, public or shared transport more attractive compared to single-occupancy vehicle rides
- Putting citizens first in mobility design is most important
- Data protection and privacy are major concerns, hindering the development of ITS

Interesting Concepts from the Exhibition

Ride Flag is an app that matches riders and drivers in real-time to make car-pooling easier. They also work with tolling-agencies to directly reduce bridge-tolls for high-occupancy vehicles. They are a company that TMA SF Connects should consider promoting since this could really help to reduce single-occupancy vehicles in downtown.



Decide who to drive or ride with

Drivers and riders see detailed information about each other, so they can select who to pick up or catch a ride with. RideFlag fairly adjusts expenses between riders and estimates detour times.

Figure 1: Ride Flag is a real-time carpooling app

New ITS Solutions, like a system developed by the company Dynniq, offer the potential, to create green flows for example for cyclists. A sensor connected to the bike or location data from a mobile app can be used to switch traffic lights to green and make non-motorized transport more attractive. The same system could be used for busses or shared vehicles as well, to make single occupant vehicles less attractive. However, data security and privacy are issues that need to be dealt with before deployment of such systems.



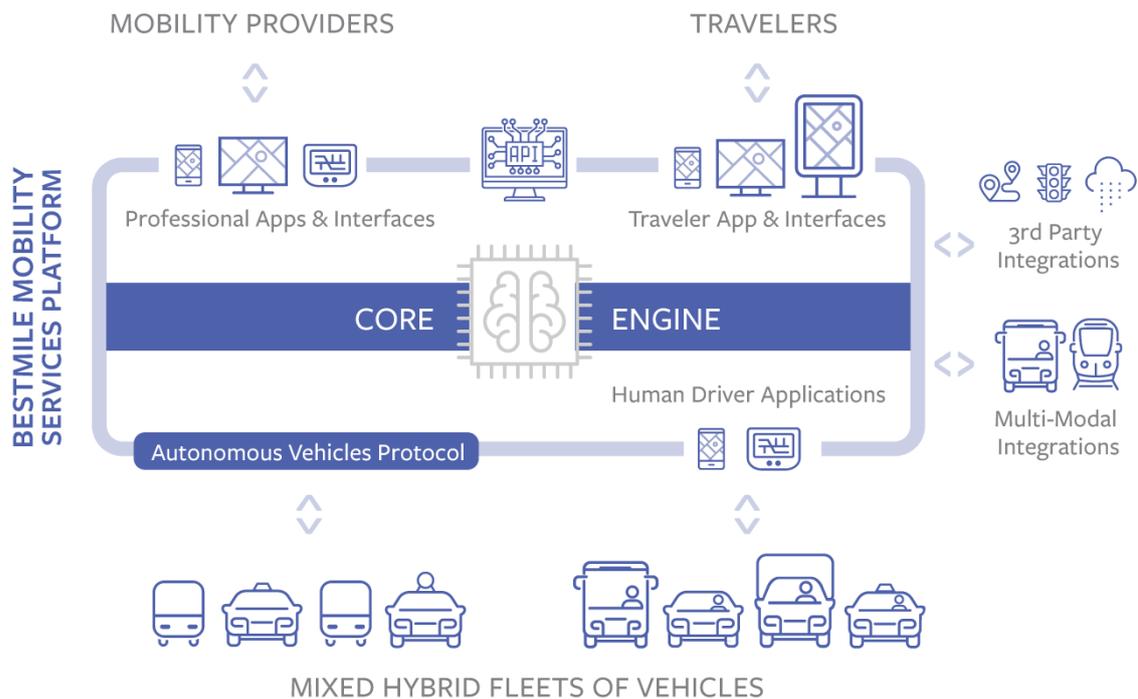
Figure 2: ITS Solution for green flow

MOIA is a startup from Germany, offering ride-pooling services in cities. They recently started operation in Hannover and will also launch in Hamburg soon. Compared to Uber or Lyft, they only offer pooled rides and aim to reduce single occupancy vehicles on the roads. They developed a vehicle specifically for ride-pooling to ensure maximum comfort and privacy in the vehicles to make it very attractive for the customers.



Figure 3: MOIA Ride-Pooling Service from Germany

Another company developed a mobility service platform, called bestmile. This platform empowers providers to deploy, manage and optimize autonomous and human-driven vehicle fleets, supporting fixed-route and on-demand services, into the existing transportation ecosystem. Autonomous mobility services and technology are transforming the transportation industry as transit agencies, taxi companies, transportation network companies (TNCs), and vehicle manufacturers shift to offer new mobility services.



Another interesting company, Airpark, developed artificial intelligence based parking. Artificial intelligence in the cloud analyzes video streams from connected cameras. The service identifies parking violators in real-time to automate enforcement and suggests open parking spots to reduce search time for a seamless driver experience.

Interesting Findings from the Sessions

We are still underestimating the importance of active modes for inclusive and sustainable development (Manfred Neun)

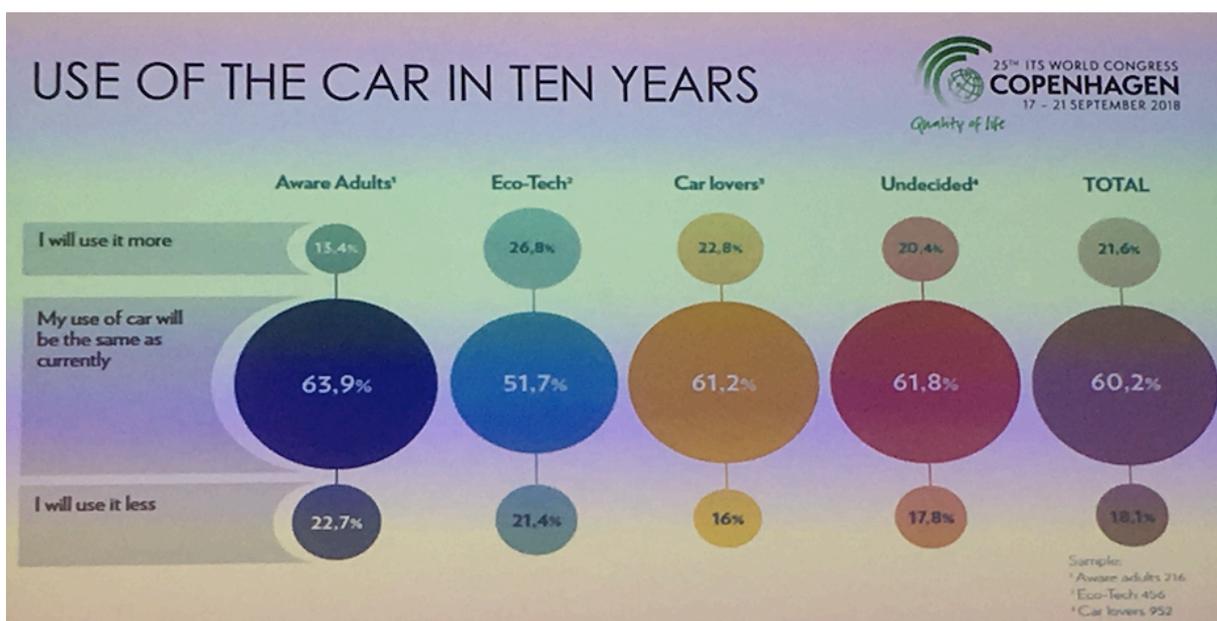
Active Mobility is a basic human need and right. By respecting this we are becoming able to unleash the enormous potential for health, energy savings and many more. A holistic approach is prioritizing Active Mobility – with significant benefits for the entire mobility system, essential for any intermodality.

We are still underestimating the importance to overcome the fragmentation of transport modes and measures on the way to intelligent transport solutions (Manfred Neun)

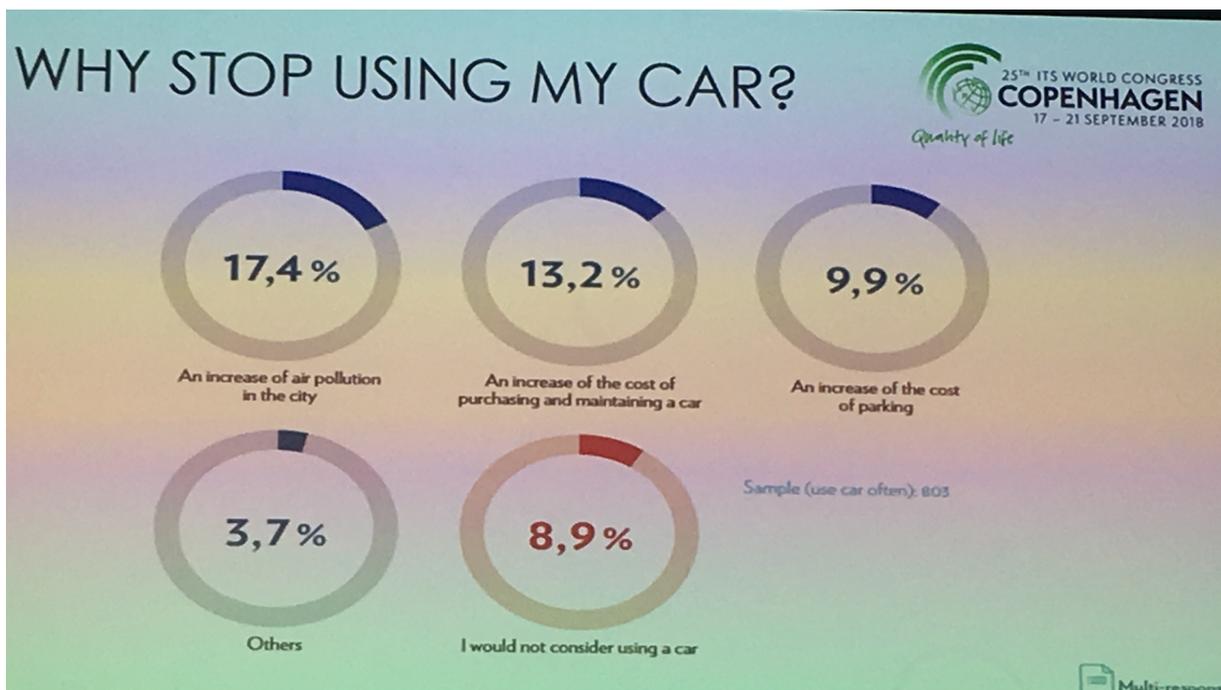
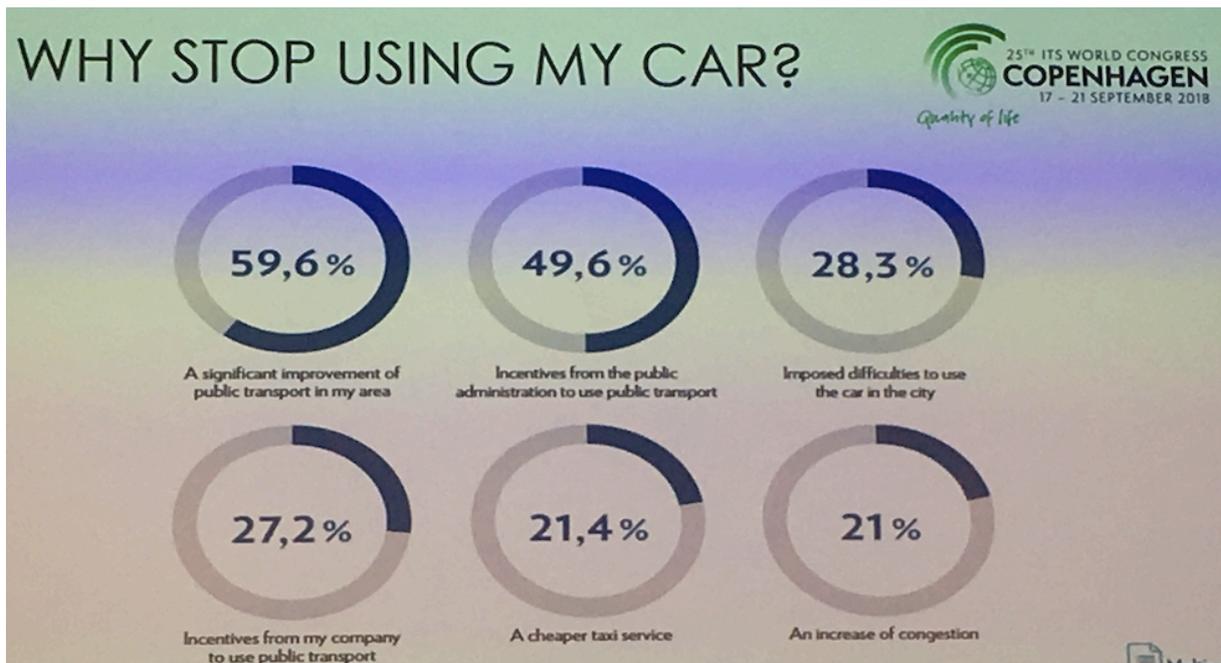
If we will not respect the systematic interaction of all modes of transport in our future ITS scenarios, and also match them with the entire requirements of sustainable development, in particular of the UN Sustainable Development Goals (SDGs), we will never achieve to create sustainable mobility.

Two-directional information flow that includes information from users to transit agencies and transit vehicles could be used to improve transit efficiency and safety. (Research by Morgan State University)

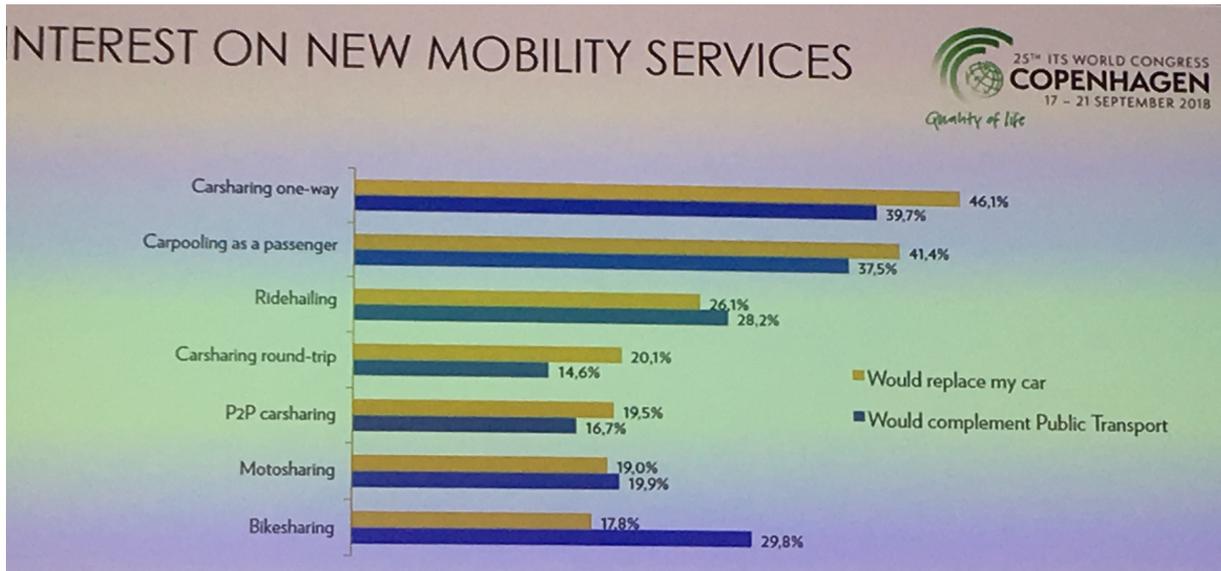
A study in Barcelona shows the expected use of private cars in ten years:



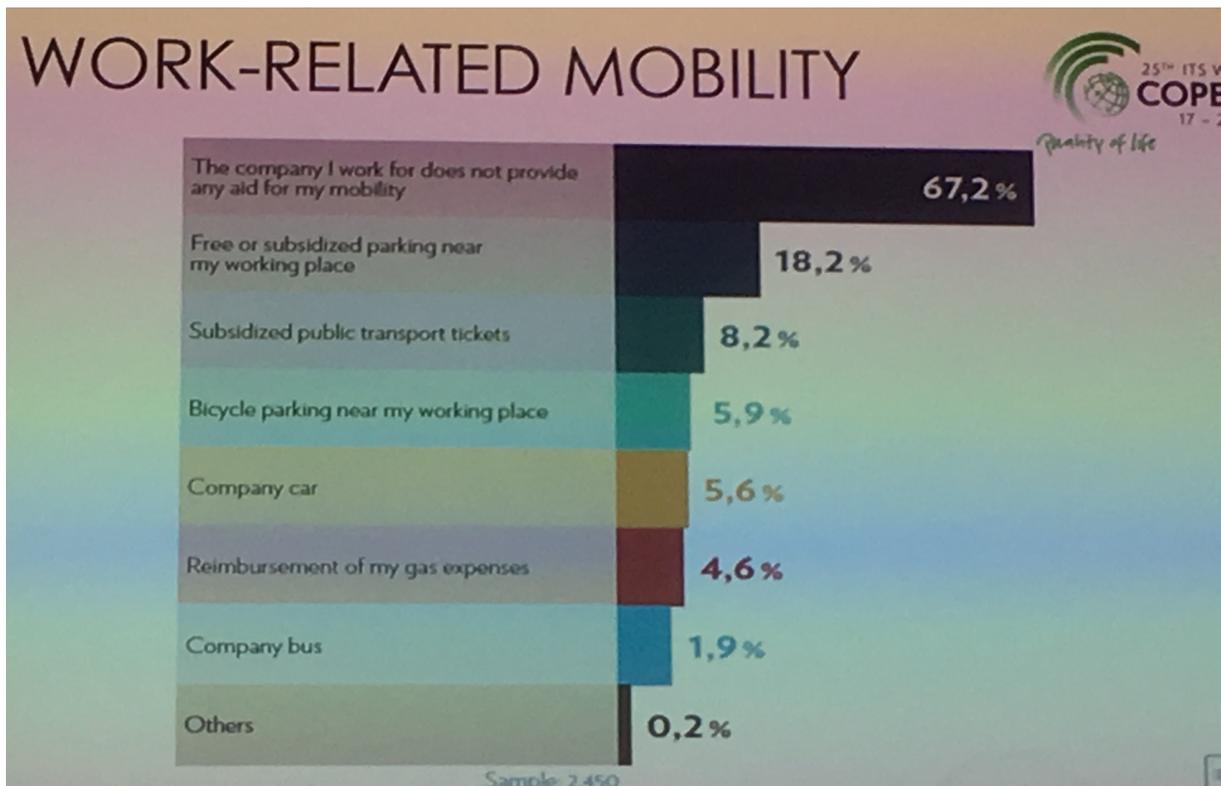
Reasons why people would stop using their car are:



Most of them would replace their car by Carsharing or Carpooling:



This is how the transport benefits by their companies look like:



Technical Visits

Ideon Science Park

Ideon Science Park is a science park in Lund, Sweden, with about 120 000 square meters of office and lab space in over 10 buildings. Ideon was built over 30 years ago right next to the University of Lund in order to connect science and research with innovators and entrepreneurs. Ideon was the first Science Park of its kind in Sweden and northern Europe. Companies like Bosch, Sony, Ericsson, Volvo, Huawei, Texas Instrument and Schneider Electrics have R&D departments or offices here, to benefit from the mix of competences when developing the future.

The technical visit started with an introduction by the CEO, Mia Rolf, followed by a short presentation of Elonroad. Elonroad is a high-tech electric road concept. It auto charges all types of electric vehicles when parked as well as when driving. A rail consisting of short grounded segments is arranged along a single track. Every second segment can switch to positive when a car passes over it. 3 contactors will provide for a steady current rectified with diodes before charging the battery.

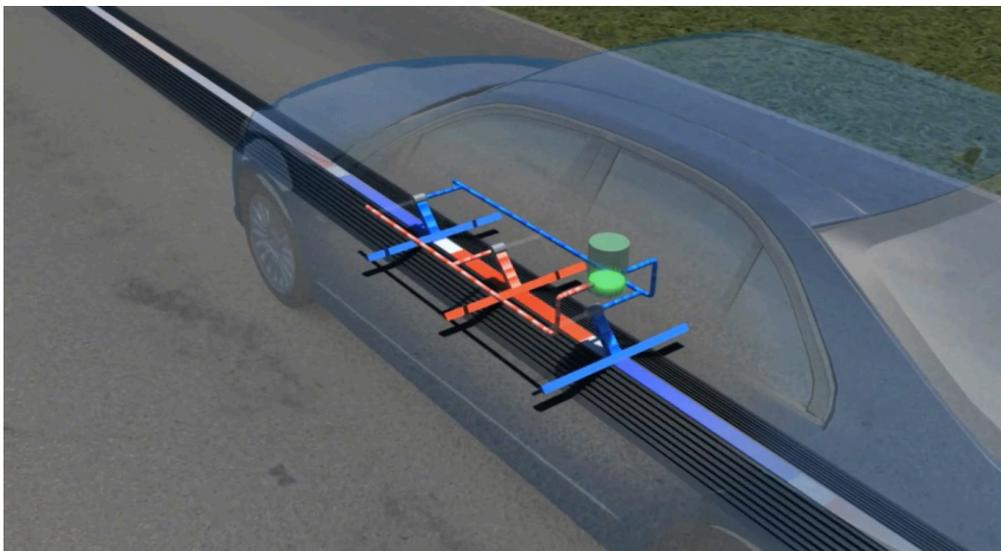


Figure 4: Elonroad's charging system

Elonroad's concept involves a conductive rail laid on top of the road. It has inclined sides to make it smooth when changing lanes. Elonroad is 5 cm high and 30 cm wide. The concept is shown in figure 1.

The technical tour also included a tour to the R&D site of Volvo, where new Android-based systems for the vehicles are developed. Goal is to have all kind of apps running in the car. The staff comes from former Ericsson and Intel and is very experienced in this area. In contrast to the other departments of Volvo, this is a very agile work environment.

Furthermore, a tour of the Sigma Connectivity prototype lab was included. It's one of Europe's most advanced design, test, and verification in-house labs. Sigma Connectivity was acquired by the Sigma Group from Sony Mobile in 2013. Since then they have successfully increased the development teams from 180 to over 500 employees and made full use of their competence which was founded in the R&D investments Ericsson started making in Lund in the early 80s.

ITS Solutions for bicyclist

Cycling in Copenhagen is an important means of transportation and a dominating feature of the cityscape. The city offers a variety of favorable cycling conditions — dense urban proximities, short distances and flat terrain — along with an extensive and well-designed system of cycle tracks. This has earned it a reputation as one of the most bicycle-friendly city in the world. Every day 0.75 million miles are cycled in Copenhagen, with 36% of all citizens commuting to work, school or university by bicycle; almost as many people commute by bicycle in greater Copenhagen as do those who cycle to work in the entire United States. Cycling is generally perceived as a healthier, more environmentally friendly, cheaper, and often quicker way to get around town than by public transport or car.

Intelligent stations count the number of bikes per day. However, there are still technological challenges and the counting is not always accurate. App-based systems could solve this issue but data protection is another challenge that needs to be addressed first.



Figure 5: Stations count the number of bikes in Copenhagen's streets

ITS Solutions in Malmö

Malmö is the capital and largest city of the Swedish county of Skåne County. Malmö was one of the earliest and most industrialized towns of Scandinavia, but it struggled with the adaptation to post-industrialism. Since the construction of the Øresund Bridge, Malmö has undergone a major transformation with architectural developments, and it has attracted new biotech and IT companies, and particularly students through Malmö University, founded in 1998. The city contains many historic buildings and parks, and is also a commercial center for the western part of Scania.

Malmö has 250 miles of bike paths; approximately 40% of all commuting is done by bicycle. Therefore, infrastructure, including smart parking systems play a major role. Safe Park&Bike stations can be accessed with a card that also works for public transit. The following picture gives an overview about the facility.



Figure 6: Park & Bike in Malmö

Furthermore, Malmö has a very new and efficient bus-system. All new busses include USB-Chargers and free Wi-Fi as well as comfortable seats, to make public transit more attractive for customers. The concept is “think tram, drive bus” to include all advantages of a metro but use the normal infrastructure for busses. All new busses are hybrid, including electric batteries to be more environmental-friendly. Also, they are especially long and have a capacity of 90 people. The bus can be seen on the following picture.



Figure 7: Hybrid bus in Malmö, Sweden

Another site visited, is the biogas fueling station by e.on, that uses locally produced biogas to refuel vehicles. The site was very popular and used by a lot of taxi drivers and other people as well.

