

FEDERAL PROCUREMENT AGENCY, GERMANY

Background

The German Federal Procurement Agency (BeschA) provides a centralised procurement function for German state ministries and agencies, covering a number of product and service categories. As part of the national transition towards electromobility, BeschA procured docking stations and wall-integrated sockets for charging electric vehicles (EVs) owned by the Federal Police. Together these constitute 'e-fuel stations', where electric cars, bikes and mopeds can be charged.

For every tender, BeschA aims to procure in the most sustainable way possible. To support this, the Agency launched a [Competence Centre for Sustainable Procurement](#). This Competence Centre also led the working group on the e-fuel stations.

Procurement objectives

The open tender was published in the Official Journal of the EU (OJEU) in summer 2013. The Agency's working group on electromobility was able to draw from the experience gained during the procurement of a previous e-fuel station.

BeschA wanted to ensure that the e-fuel station was as versatile as possible; therefore the technical specifications included suitability for EVs, hybrid plug-in vehicles and range extenders (auxiliary power sources which re-charge the battery while driving). In addition, the docking stations were required to be adaptable for two types of plugs. BeschA also stipulated a user-friendly process for keeping track of consumption and usage.

This tender is part of the Federal Police's implementation of the [German national programme for electromobility](#) which requires that from 2013 onwards at least 10% of all newly purchased or leased cars for all Federal Organisations must emit tailpipe emissions of less than 50 g CO₂/km.

Criteria used

Subject matter of the contract:

Delivery of docking stations (20) and wall-integrated sockets (8) for electric vehicles

Technical specifications:

- The offer must be suitable for electric vehicles, hybrid plug-in vehicles and range extenders.
- A calibrated AC electrical energy meter must be installed¹
- Charging must be possible in accordance with IEC 62196 mode 2 (up to 32 Ampere) and 3 (quick charging with up to 250A)
- In mode 2 (32A, 400V, 3 phase) the overall output has to be automatically capped at 22kW
- Docking stations are suitable for:
 - IEC 62196 (international standard for charging connectors) and
 - CEE 7/4 (European standard electrical connector), both have to be readily accessible at the charging station
- Weather proof casting according to the International Protection Rating IP44
- The charging station has to work without problems at temperatures ranging from -25 C° to 40 C°
- For user monitoring purposes at least the following data has to be collected:
 - Charging cycles
 - Amount of energy charged allocated to user ID cards
 - Quality data (velocity of charging, uninterrupted charging)
 - User data
- The charging process may only start after the user ID card has been swiped
- Interruption of the charging process has to be possible at all times
- Payments can be made by pay-as-you-go or user identification cards

Award criteria:

The contract was awarded to the bidder with the lowest price who was able to comply with the technical specifications.

1. For the monitoring of the effective power at IEC 62053-22 and capacitive reactive power at IEC 62053-23

Electric vehicle docking stations (e-fuel stations)

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Results

Eight bids were received in response to this tender. The final costs were lower than initially expected.

Due to the fact that this procurement was successfully carried out, the way has been paved for an effective roll-out of charging stations throughout the country. So far, 28 stations have been installed in locations where the Federal Police have electric vehicles.

The working group played an important role for the success of this tender because it involved a wide variety of stakeholders, including representatives from the federal ministries, local governments, research institutions and technical experts, all of whom were able to support the Agency with their knowledge and experience. Their recommendations are based on [an analysis](#) of available technology and the needs of public buyers.

Environmental impacts

The Federal Police has docking stations all over Germany, all of which use at least a mixture of electricity from renewable and non-renewable sources. As a federal organisation, the police are required to source at least 26% green energy, however, docking stations in some cities use as much as 100% green electricity.

Overall, the charging stations contribute to making electromobility user-friendly and feasible for long distance usage and thus increase the distribution of electric vehicles in Germany. Alternative fuel vehicles, such as electric vehicles have a use-phase which is far less damaging than the use of conventional fuels. Conventional vehicles tend to be associated with greenhouse gas (GHG) emissions including HC, CO₂ and especially NO_x from diesel engines, which all contribute towards climate change and local air pollution. The emission of small particulate matter, which is associated with the aggravation of respiratory ailments, is also avoided. Zero emission electric cars are therefore preferable in terms of their use-phase and even more so if the electricity originates from renewable sources, as laid out in the EU's GPP award criteria for passenger cars, passenger transport vehicles and waste collection trucks.

Using the example of an electric car that uses 15kWh/100km, and taking the average German emissions of 510g CO₂/kWh according to the national energy mix, this equates to 76.5g CO₂/km 'well-to-wheel' (emissions associated with all stages of providing energy to propel the vehicle, including in this case, electricity generation). For this particular example, this would be the absolute maximum well-to-wheel emissions for each police car, the minimum effectively being 0g CO₂/km well-to-wheel in those cities with 100% renewable energy provision, as both the production of the energy and the use of the vehicle cause no carbon to be emitted.

The Clean Vehicles Directive provides a common methodology for considering GHG emissions and the energy consumption of road transport vehicles. Further information is available from [DG Mobility and Transport](#) and the [Clean Vehicles Portal](#).

Lessons learned

Electromobility is a rapidly developing field of technology: hence it is difficult to foresee charging needs and systems for the long term. This challenge has been addressed in this tender by installing four plugs at each docking station; two regular plugs and two for rapid charging. Rapid charging is a technology that not all car manufacturers currently support. BeschA hopes that the provision of both plug types will ensure the long term usability of the e-fuel station. The Agency acknowledges that only time will tell if that prediction was correct.