Christian U. Haas
CEO of the PTV Group
in Karlsruhe (Germany)

© PTV Group

Please Hold the Line: Expanding German Charging Infrastructure

Electric mobility is booming, as could be clearly felt in Germany in 2021 and as the continuously increasing sales figures show. Thanks to state grants and attractive leasing rates, e-cars are becoming increasingly affordable. And, in the meantime, even German car makers have begun focusing more on e-vehicles. So for example, several manufacturers have announced a stop for combustion engines for the next decade. The rapid growth in e-mobility is seen as one of the key elements for the traffic transition into a greener future.. What is still holding it back is the stuttering expansion of charging infrastructure. Although Germany now has over 25,000 public charging stations, their placement is scattered and there is an insufficient number of fast chargers.

This is a problem that has not just been recognized by the federal government. In order to be able to boast at least 50,000 charging stations by 2025, Germany is supporting the expansion with 500 million euros. From classic electricity suppliers, municipal utilities, automotive manufacturers, all the way up to oil companies, are investing in e-charging infrastructure. Then why is this progressing so slowly, despite immense growth opportunities, grants, and investment intention? One reason is certainly that the planning thereof is very often not systematic enough. Finding the optimum locations for profitable charging stations and making the correct investment decisions is a challenge with multiple issues: How many people will switch to e-cars in a certain region, and when? Where will they charge their vehicles: at home, at work, at public charging stations?

How many charging points will be needed and what are the best locations with a nod to points-of-interest? Are there already charging points nearby?

Simulation models that take data such as mobility and socio-demographics into consideration help with the understanding of demographic patterns and thus the acquisition of how people drive and where they are going. Going through different scenarios in a virtual environment provides a view of how electric vehicles can be used in the near and far future, and also enables the forecasting of charging opportunity needs. In parallel to the analysis of requirements and location, another decisive factor for successful planning is the consideration that electric vehicles require a stable and sufficiently powerful electricity grid. Fast chargers can supply up to 360 kW. Choosing the wrong location for charging points can quickly lead to high connection costs. The British project “Charge”, in which we worked with our partner ScottishPower, brought traffic and grid planning together for the first time. Data regarding grid capacity flowed into our traffic model. This enabled us to analyze how the use of electric vehicles would develop and what the consequences for the grid were. In our traffic-choked cities, electric vehicles can make an important contribution to air pollution control. For the very reason that many of the people living in cities are dependent on public charging points, the e-charging network will have to be expanded quickly. The effective use of data can allow simulation software to become a valuable instrument for systematic and efficient planning.