



ON THE ROAD AGAIN

As the number of e-cars grows, so does the importance of the charging infrastructure. For the third time, umlaut and connect are testing the quality of HPC charging stations - now already in six countries.

The numbers are growing fast: from January to August 2021, according to the German Kraftfahrtbundesamt (Federal Motor Transport Authority), 421,262 of the 1.8 million newly registered passenger cars in Germany had an electric drive (plug-in hybrids and fuel cells included) – almost one in four new cars.

With this success, however, the pressure on the charging infrastructure is also increasing. Indeed, the corresponding numbers are climbing too – for October 2021, the German Bundesnetzagentur (Federal Network Agency) reports 41,239 public normal and 6845 fast charging points in Germany. In 2021 alone, 4677 with up to 22 kW and 814 with more than 22 kW charging capacity were added. Nevertheless, the ratio of e-cars to charging points is growing – there are currently around 17 electric vehicles

per charging point, with ten being considered as a good value. As a result, it is a matter of luck to find a free charging point in city centres. And frequent e-drivers report that they increasingly have to wait for charging even on motorways.

Equally important: Information and charging convenience

As a result, comfort aspects such as lighting, roofing and convenience could become less important – better an uncomfortable charging point than none at all. But in view of the described development, advance information such as operational readiness and availability is becoming increasingly important. Furthermore, the acceptance of electric mobility largely depends on the charging experience. Both are therefore important criteria in our third charging network test. Together with our test partner



„Growing demand is putting a strain on the charging infrastructure. Congratulations to EnBW, Ionity and Fastned for coping best with this situation in each of the countries tested. Also to EnBW for winning as EMP as well.“

Hakan Ekmen, CEO Telecommunication at umlaut

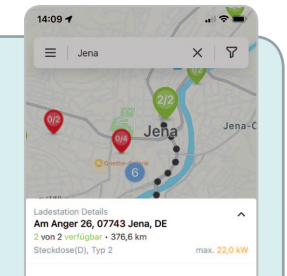
umlaut, we have again focused on charging locations with „High Power Charging“ (HPC), which is relevant for long-distance travelling. And the numbers are also increasing for us: In addition to the DACH region, we are now also visiting the Benelux countries; never before have our test drivers assessed so many e-mobility providers (EMPs) and charge point operators (CPOs). Hannes Rügheimer

GERMANY

EnBW The Baden-Wuerttemberg energy provider cuts a very good figure as an e-mobility provider and thus achieves the EMP test victory for the third time in a row.

There are reasons why the app and tariffs of the comprehensive provider from Baden-Wuerttemberg are considered the gold standard among e-car drivers – and why the German automotive club ADAC also collaborates with EnBW for its charging card offer. With fair rates, a large number of charging points in Germany and abroad can be used.

Even the Ionity network, which EnBW had temporarily blocked, is included again. The EnBW app is consequently found on the smartphones of many e-car drivers. Its usability and functions are convincing. Overall, only a few items on the wish list remain open – such as photos of the charging locations. In all, EnBW deservedly wins again among the EMPs.



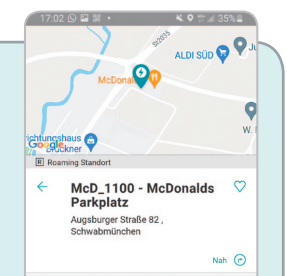
E-guide: The EnBW app is intuitive and informative.

connect verdict: very good (854 P.)

E.ON Even if the tariff model could be a little clearer, the Essen-based provider delivers an intuitively usable app and a well usable mobility offer.

In 2020, with the integration of Innogy the Essen-based energy company also took over Innogy's charging network and e-mobility business. Its „E.ON Drive“ app is linked to the charging tariff of the same name and thus requires entering into a contract with a basic fee. In addition, there is a somewhat confusing tariff model consisting of a

base and/or kWh dependent price plus a roaming surcharge if applicable. At least the app, which is intuitive to use, provides information about all these costs in advance. The testers would like to see a function to share location addresses and more real-time information about ongoing charging processes. Overall, however, the offer is respectable.



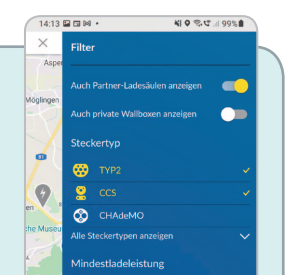
Leading the way: „E.ON Drive“ supports e-car drivers.

connect verdict: satisfactory (737 P.)

EWE The energy supplier's EMP offering and the associated app show some potential for improvement – for example, regarding price information and real-time information.

The „Punktladung“ app of the former „Energieversorgung Weser-Ems“ is also closely linked to the provider's „Mobility Card“. Without charging activities, however, only a one-off charge is due for this and no monthly fee. However, the number of supported charging points could be somewhat higher, and the app reacted somewhat sluggishly in the

test. In the practical testing, it also confused the user by displaying charging processes that had physically already ended as still being in progress. It would also be practical if the filtering function could select not only „> 50 kW“ but also real HPC charging stations. There is also clear potential for improvement in the price information in the app.



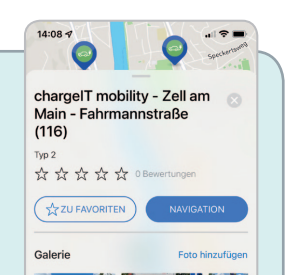
Coarse sieve: The app's filter functions could be finer.

connect verdict: sufficient (516 P.)

Maingau With „EinfachStromLaden“, the name says it all: the app and mobility offer left only minor wishes unfulfilled and scored well overall.

With its „EinfachStromLaden“ brand, the energy supplier based near Offenbach am Main is also an important player in the German e-mobility market. As part of its overall fair tariff offer, Ionity stations can also be used. As a special feature, the app also offers its own route guidance, although charging stops cannot be automatically integrated

into it. Usind the app is intuitive, real-time status information, practical filters and a useful favourites function help with selecting charging stations. However, it would be nice to get more real-time information during the charging process. With a high charging point coverage, transparent cost information and consistent payment, a good second place.



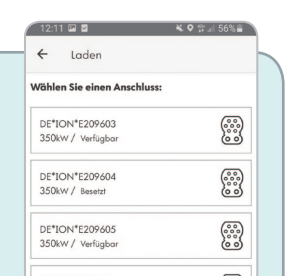
Preferred: Stations can be saved as favourites.

connect verdict: good (822 P.)

Shell The mineral oil company also already plays an important role in e-mobility. However, the charging experience, especially via the app, was sometimes a little shaky in the test.

Through the integration of the formerly independent charging card provider NewMotion, „Shell Recharge“ quickly became an important e-mobility provider. It supports a large number of charging points in Germany as well as its neighbouring countries – including Ionity. A RFID charging card or key fob grant access. However, at some stations

charging can only be started via the app. There in turn, the testers missed charging instructions as well as live updates on the current charging process. During the test, they also encountered some interruptions in the real-time data on availability. Thanks to extensive coverage and coherent payment functions, however, the offer is satisfactory overall.



Inconsistent: The accuracy of real-time information varies.

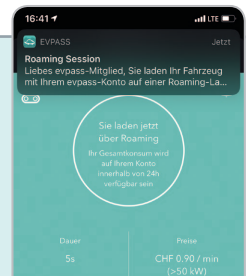
connect verdict: satisfactory (681 P.)

SWITZERLAND

EVPass The app of the largest Swiss charging network, by its own account, could be a little more informative. However, price transparency and payment methods are okay.

► EVPass is backed by the provider Green Motion, FMV SA (Forces Motrices Valaisannes) and the Aargau energy supplier AEW Energie AG. EVPass claims to offer the largest Swiss charging network – however, we were only able to obtain incomplete coverage information, especially abroad. The tariffs are differentiated according to charging power and whether

used domestically or abroad, with or without a fixed base price – this is quite clear. However, since the app does not display all charging points correctly, choosing the right one becomes a guessing game. The testers would have liked to see charging instructions, and location as well as charging info could be more comprehensive. Payment gave no cause for criticism.



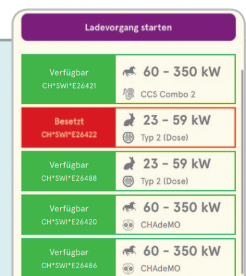
Warning service: The info on roaming is good.

connect verdict: sufficient (600 P.)

Move The joint venture of major Swiss energy service providers supports Swiss e-mobilists with an overall coherent offering.

► Move Mobility AG is a joint venture of the Swiss energy service providers Alpiq, ewb, Groupe e and Primeo Energie. In addition to the charging points of these owners, however, other CPOs in Switzerland and abroad are also supported. Customers identify themselves at the charging points via a key fob ("Move Badge") or via an app.

Using the app is intuitive, but it would be helpful to have detailed usage instructions for the different CPOs' charging point types and better support when sharing location addresses. There is also room for improvement in the information provided during charging. Overall, however, Swiss customers are served well with this service.



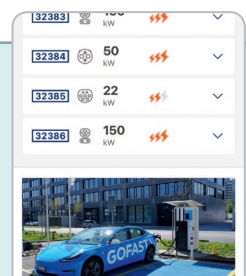
Real(?)time: Availabilities were not always correct.

connect verdict: satisfactory (671 P.)

Swisscharge This e-mobility provider from St. Gallen also provides its customers with a decent overall package.

► The provider based in Gossau, St. Gallen, offers e-car drivers access to supported CPOs via an app or a RFID card. Supported charging points include those from Agrola, GoFast and Socar (see from page 80). However, the charging costs vary, which is why price-sensitive users should check them before charging.

The app, which is largely intuitive to use, helps quite well. Here too, however, charging instructions for the supported CPO stations would be welcome – as would filtering by availability, more support when sharing location addresses and more information during charging. The payment methods offered are quite comprehensive.



Preview: Photos inform about (own) charging points.

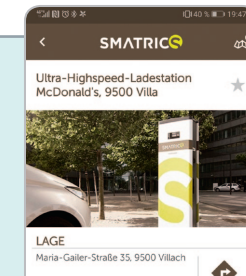
connect verdict: satisfactory (669 P.)

AUSTRIA

Smatics The Vienna-based provider sees itself as an allrounder for e-mobility. Overall, the coverage, app and offer present a decent picture.

► Together with a large number of CPO partners, Smatics provides a dense network of charging points in Austria and also in neighbouring countries via roaming. The consequence, however, is a rather complex pricing structure, which differentiates minute prices according to the charging power in roaming situations. However, the charging costs

applying for a charging point are clearly communicated in the app, and the operation is otherwise quite intuitive. The charging instructions for the different CPOs and quite reliable availability data delivered in almost real time are also positive. Still, it would be nice to have more payment options and broader support, especially in Germany.



Pictorial: Photos help to select and find the stations.

connect verdict: satisfactory (652 P.)

Necessary prerequisites for the advancement of e-mobility

Not all aspects which can make charging more available and convenient are completely in the hands of the charging point operators themselves.

■ Good signage, bright lighting, attractive locations – such factors are important to make charging stops as stress-free and pleasant as possible. That is why they also play an important role in our scoring. In our regular exchanges with CPOs, however, they repeatedly point out that they cannot influence some of these factors on their own.

For example, on motorways or motorway rest areas, many players are involved when it comes to signage, placement, lighting and furnishing – such as the owner of the German motorways, Autobahn GmbH, the operators of the rest areas and the involved municipalities. Not all of them always pull together, and coordination and approval processes often take agonisingly

long. Better signposting away from the motorways is sometimes rigorously rejected by district authorities. And in city centres, charging stations are in constant competition for the already narrow traffic space and scarce parking areas. Cities also often impose very restrictive specifications for equipment such as roofing. The lead and processing times for grid connection and approval procedures have always been extremely long. The corresponding processes are often unnecessarily time-consuming and even the documents to be submitted are by no means uniform throughout Germany. In addition, there are technical issues such as a multitude of control interfaces and protocols on the part of the distri-



Signage is one crucial point: Even in public places, the designation of charging points is not always a high priority.

bution grid operators in the electricity grid. These are all tasks not least for the next federal government, which is currently in the starting blocks. The goal of expanding e-mobility does not only require financial resources – but also a considerable amount of effort in the details.

Results Electro Mobility Providers (EMPs)

Providers	Germany						Austria			Switzerland		
	EnBW Mobility+	Maingau	E.ON	Shell Recharge	EWE	Smatics	Move	Swisscharge	EVPass			
Web	www.enbw.com/elektromobilitaet	www.maingau-energie.de	www.eon.de/de/pk/e-mobility.html	www.shell.de/autofahrer	www.ewe-go.de	smatics.com	www.move.ch	www.swisscharge.ch	www.evpass.ch			
Supported HPC charging points (min. 150 kW)* D / AT / CH / BEL / NL / LUX	1753 / 230 / 297 / 75 / 477 / 6	1800 / 214 / 337 / 119 / 351 / 9	2290 / 315 / 341 / - / 147 / -	1800 / 220 / 280 / 50 / 450 / -	1928 / 5 / 8 / - / 12 / 2	1432 / 97 / 44 / 44 / 39 / -	1200 / 100 / 269 / 100 / 200 / 2	1371 / 105 / 269 / 13 / 5 / 2	** kA / kA / 243 / kA / kA / kA			
App: Usability	good	very good	good	satisfactory	very good	good	satisfactory	sufficient	sufficient			
Available for Android / iOS	+	+	+	+	+	+	+	+	+			
Usability / Instructions for charging points	very good / +	very good / +	very good / +	satisfactory / -	sufficient / +	very good / +	very good / -	very good / -	sufficient / -			
Overview of nearby locations	very good	very good	very good	very good	very good	very good	very good	very good	satisfactory			
Rate / Favour locations / Location info with photos	+ / + / -	+ / + / +	+ / + / +	+ / + / -	+ / + / -	+ / + / +	+ / + / -	+ / + / +	+ / + / -			
App: Functions												
Reliability of real-time data	good	very good	good	satisfactory	very good	good	satisfactory	sufficient	sufficient			
Filter by charging power / plug type / available charging points	+ / + / +	+ / + / +	+ / + / +	+ / + / +	+ / + / +	+ / + / +	+ / + / +	+ / + / +	+ / + / +			
Info: current charging power / charged kWh / charging time / history	+ / + / + / +	+ / + / + / +	+ / + / + / +	+ / + / + / +	+ / + / + / +	+ / + / + / +	+ / + / + / +	+ / + / + / +	+ / + / + / +			
Integrated route planner / Navig. to charging point with Apple or Google Maps	+ / +	+ / +	+ / +	+ / +	+ / +	+ / +	+ / +	+ / +	+ / +			
Payment/price transparency												
Price display before/after loading / invoice export (PDF)	+ / + / +	+ / + / -	+ / + / +	+ / + / +	+ / + / -	+ / + / -	+ / + / -	+ / + / +	+ / + / -			
Comprehensibility of pricing model	very good	very good	good	good	very good	satisfactory	very good	satisfactory	good			
Billing via credit card / SEPA direct debit / PayPal	+ / + / -	+ / + / -	+ / + / -	+ / + / -	+ / + / -	+ / + / -	+ / + / -	+ / + / -	+ / + / -			
Test results												
Points Charging point coverage (max.200)	166	162	162	163	116	87	91	114	100			
Points App Usability (max.200)	180	195	160	130	140	175	150	165	80			
Points App Functions (max.300)	223	220	190	163	180	190	185	140	175			
Points Payment/price transparency (max.300)	285	245	225	225	80	200	245	250	245			
connect VERDICT max. 1000	854 very good	822 good	737 satisfactory	681 satisfactory	516 sufficient	652 satisfactory	671 satisfactory	669 satisfactory	600 sufficient			

* According to information from the EMPs and research by umlaut and connect.
** No exact data available for neighbouring countries, but can be used via roaming.



Plug & Charge and/or Autocharge?

Plug in, charge, unplug, drive off – and the payment takes place in the background. But the path to this kind of charging convenience is controversial in the industry.

■ With „Plug & Charge“ or ISO 15118, charging station manufacturers and operators, car manufacturers and other stakeholders have agreed on a standard that automatically exchanges payment data between the car and the charging station while the car is charging. Some first cars and also some charging stations are already prepared for this – for example, recently announced the activation of this technology in its network. But the introduction is proceeding slowly, not least because different market participants are pursuing different interests. This is why providers such as Fastned have developed a simpler, faster alternative with „Autocharge“.



Payment information via the charging cable: two solutions compete for success in the market.

EnBW also wants to join this initiative. The principle: identification is based on a unique vehicle address that can be retrieved via the cable, the payment data is stored in the customer account in advance. However, not all e-cars support this, and there are also discussions about counterfeit protection. Thus, it is not yet clear which approach will prevail.

Test route Germany

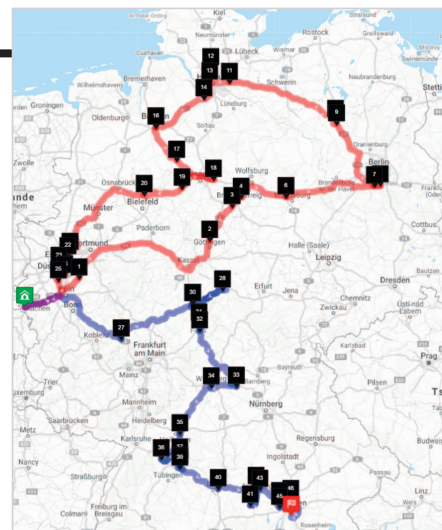
umlaut's test drivers covered 3024 kilometres in Germany – and made a total of 46 charging stops at HPC charging stations.

umlaut's test drivers divided their test tours in Germany into a northern and a southern route – whereby the southern route also included a part of the charging stops in Austria. The northern tour took place from September 13th to 17th and included 25 charging stops. The test drivers completed the southern tour from September 20th to 24th, stopping to charge a total of 21 times. The tests at Tesla Superchargers, which were carried out out of competition, were added to this.

Where possible, six, but at least five different locations were included in the evaluation of the German Charge Point Operators. Of course, all Corona safety measures such as wearing masks outside the vehicles and maintaining sufficient

distances were taken into account. On the test drives on the northern and southern routes, the e-tron 55 quattro provided by Audi (see also page 81) was mainly used, but for individual sections the two other test electric cars, Porsche Taycan Turbo S and Polestar 2, were also employed. Different charging stations of a CPO were thus sometimes visited with different electric cars.

As the CPOs Allego, Fastned, Ionity and Shell Recharge are active in several of the countries we tested, we have summarised their descriptions on page 78 under the category „International“. Their individual results for Germany can be found in the table below – as can those for the other countries in the respective tables.



From north to south

The test drives through Germany consisted of a north and a south route and took place from September 13th to 24th.

EnBW The company from Baden-Wuerttemberg convinced in almost all test categories and thus took first place among the German CPOs this time.

The Baden-Württemberg energy provider operates a large network of charging stations which is not limited to its own federal state – including 900 HPC fast charging points (at least 150 kW). Some of the stations visited by umlaut's testers could be better equipped with signs, but there were no complaints about the lighting. Whether

there are toilets, restaurants or shops nearby depends on the respective location. The actual charging was mostly reliable – only at one station was the first charging point out of order. The testers were also impressed by the service and payment options – all in all, EnBW came out on top of the German CPOs this time.



Reliable energy: The EnBW columns worked stably.

connect verdict: very good (863 P.)

E.ON The "Charge-On" subsidiary of the Essen-based energy company has a respectable charging network. The charging comfort varies depending on the location.

In addition to its charging solutions for private and corporate customers, the Essen-based energy group also operates a respectable charging network including around 100 HPC charging points via its subsidiary "Charge-On". In addition to its own charging card and the "E.ON Drive" app, the provider also supports various EMPs. Of the locations tested,

there were signposts only at one motorway service station, and there is also still room for improvement in terms of weather protection. When it came to amenities near the location, there were substantial differences in the test. However, the actual charging processes worked well, and the E.ON offer also performed well in terms of service and payment options.



Variable: The site environments were quite different.

connect verdict: good (751 P.)

EWE The cooperation between EWE Go and the fast-food chain McDonalds was visible at all the locations selected for the test. The charging comfort is okay there.

EWE also has a subsidiary, "EWE Go", operating its charging network. The latter offered 69 HPC charging points at the time of the test. E-mobilists can use EWE's own "Mobility Card" or app. However, the stations are also open to other EMPs. The testers would have liked to see better signposting at the stations. On the other hand, there was a

McDonalds restaurant at each of the test locations we selected in advance – a result of the cooperation between the two companies. Which as a consequence also provides good lighting in addition to the availability of toilets and fast food. Despite minor points of criticism, charging, service and payment all proved to be okay.



Full power: EWE Go also operates HPC chargers.

connect verdict: satisfactory (720 P.)

Mer The former provider E-Wald, now operating under a new brand name, offers a solid charging experience, but still shows potential for improvement in some test criteria.

From the forest to la mer – the former provider E-Wald, based in Teisnach, Bavaria, has been part of the Norwegian energy group Statkraft since July and has since been operating under the brand name Mer. Yet its charging point coverage in Germany has continued to grow since last year. However, some of the stations visited by umlaut

were located in industrial or residential areas and therefore lacked clear signage or signposting, targeted lighting or weather protection. Using the charging stations as well as the payment options was mostly unproblematic, but the other candidates tested just offered a bit more in terms of charging comfort and service.



Electricity from la Mer: E-Wald now has a new name.

connect verdict: satisfactory (686 P.)

Results CPOs Germany

Provider	EnBW	Ionity	Fastned	Allego	E.ON	EWE Go	Shell Recharge	Mer
Web	www.enbw.com/elektromobilitaet	ionity.eu/de	fastnedcharging.com/de	www.allego.eu/de-de	www.eon.de/de/pk/e-mobility.html	www.ewe-go.de	www.shell.de/autofahrer	de.mer.eco
Coverage								
Number of HPC charging points (min. 150 kW) / DC / AC	900 / 962 / 1690	442 / - / -	55 / 30 / 28	176 / 526 / 1655	100 / 270 / 1687	69 / 127 / 963	45 / 61 / 1323	68 / 170 / 704
Locations and Environment								
Signage / Lighting / Weather Protection	insuff. / very good / suff.	satisf. / very good / insuff.	insuff. / very good / satisf.	insuff. / v. good / insuff.	insuff. / good / suff.	insuff. / satisf. / insuff.	insuff. / suff. / insuff.	insuff. / good / insuff.
Toilets / Restaurants / Shops, Kiosks nearby	satisf. / suff. / satisf.	v. good / v. good / v. good	satisf. / good / suff.	satisf. / satisf. / good	satisf. / suff. / satisf.	satisf. / very good / suff.	v. good / insuff. / v. good	suff. / suff. / insuff.
Charging Stations								
Usability / Placement / Display	good / v. good / good	v. good / v. good / v. good	good / v. good / v. good	good / v. good / v. good	good / v. good / v. good	good / v. good / v. good	good / v. good / v. good	satisf. / satisf. / v. good
Clear indication of charging performance / functionality / Info content	good / v. good / v. good	v. good / v. good / v. good	good / v. good / v. good	v. good / v. good / v. good	satisf. / v. good / good	v. good / v. good / v. good	v. good / v. good / v. good	v. good / v. good / v. good
Signposting of the car park / Parking space marking / Size	suff. / satisf. / v. good	satisf. / suff. / v. good	v. good / v. good / v. good	v. good / good / good	good / v. good / good	v. good / satisf. / good	suff. / satisf. / satisf.	suff. / satisf. / very good
Service/Hotline								
Hotline number on charging station / costs	very good / very good	very good / very good	very good / very good	very good / very good	very good / very good	very good / very good	very good / very good	very good / very good
Multi lingual / Availability / Troubleshooting	good / v. good / v. good	good / v. good / v. good	good / v. good / v. good	good / v. good / good	good / v. good / good	good / v. good / v. good	good / v. good / satisf.	good / v. good / satisf.
Payment								
Supports Ad-hoc charging / Price comm. at Station or Web	very good / very good	very good / very good	very good / very good	satisfactory / good	very good / very good	very good / very good	very good / very good	very good / very good
Credit card / Direct Debit (Giro Pay/SEPA) / PayPal								
Test results								
Points Coverage (max.100)	100	60	25	45	35	30	28	29
Points Locations/Environment (max.250)	185	194	158	180	146	100	131	118
Points Charing stations (max.300)	258	287	288	260	263	270	274	259
Points Service/Hotline (max.150)	145	150	145	137	145	145	125	120
Points Payment/Price transp. (max.200)	175	160	160	130	162	175	162	160
connect VERDICT max. 1000	863 very good	851 very good	776 good	752 good	751 good	720 satisfactory	720 satisfactory	686 satisfactory

connect TESTSIEGER

Special review: Tesla Supercharger

Tesla operates around 2500 supercharger stations worldwide with more than 25 000 charging points. Around 1000 charging points are located in Germany – they might soon open up to other brands.

Part of Tesla's recipe for success from the very beginning was that the Californian e-mobility leader built up its own charging network with up to 350 kW with its „Superchargers“. In Germany, there are currently around 90 locations with around 1000 charging points, with 55 more locations to follow. While the charging parks have so far been reserved for vehicles of the company's own brand, there is speculation that Tesla will soon open them up to other electric cars as well. Currently, however, there is no basis for a comparison with other CPOs – which is why umlaut has visited some Superchargers with a Model 3, but has not scored them this time. The charging comfort is definitely high, even if there is still room for improvement in terms of signage, roofing and amenities. However, the actual operation might pose problems for drivers of other brands – Tesla stations do not have displays, communication takes place in the car or via app.



Out of competition: umlaut tested three Tesla Superchargers with a Tesla Model 3. For lack of comparability, however, there is no score for them this time.

Ionity The joint project of several car manufacturers is far ahead in all countries tested. In Austria, Switzerland and Belgium, it was the CPO winner.

► Ionity is backed by the car manufacturers BMW, Ford, Hyundai, Mercedes-Benz and Volkswagen, including its Audi and Porsche brands. They have already come quite close to their goal of establishing a European network of HPC charging stations in which the distance between two stations should never exceed 120 kilometres – which also made the Ionity stations an important backbone of our test drives. Drivers of the aforementioned brands usually enjoy special conditions – all others pay sometimes significant surcharges for the use of the modern and fast stations. In return, however, there is convincing charging comfort and, in all the countries

visited by our test drivers, unproblematic operation and also clear pricing conditions. In Austria, Belgium and the Netherlands, Ionity offers DC and AC charging stations in addition to HPC – mostly due to legal requirements. In addition to motorway service areas, Ionity can also be found at motor courts or, abroad, in industrial areas or comparable locations. The overall quality of the locations is high, which also includes good lighting situations. Only in terms of weather protection do Ionity stations leave something to be desired. There are also sometimes significant differences in the proximity to restaurants and shops, depending on the location and country. Overall, however, Ionity is in the top group in all tested countries. In Austria, Switzerland and Belgium, Ionity won the test in the CPO category – only in Germany and the Netherlands did the provider have to admit defeat to the local champions EnBW and Fastned respectively.



Calculable: With Ionity, you know what you get.



Local colour: Ionity uses other chargers abroad.

- connect** verdict: very good (851 P.)
- connect** verdict: good (839 P.)
- connect** verdict: good (821 P.)
- connect** verdict: good (813 P.)
- connect** verdict: good (791 P.)

Allego The Dutch provider scores in the more or less good range in all three countries tested – in detail it shows some potential for improvement.

► The Netherlands-based provider is building a charging network with numerous locations in the Netherlands, Belgium and Germany. HPC stations of this provider were of course a mandatory destination on the test tours through these countries. You can pay at the stations with Allego's own app "Smooov", but other EMPs are also

supported. There were shortcomings in terms of weather protection in all three countries tested. Amenities near the stations are more common in the Netherlands, but remain the exception in the other two countries. Overall, the operation and information content of the chargers are good, and Allego also made a good impression on its hotlines.



Variable: Allego uses different charging stations.

- connect** verdict: good (752 P.)
- connect** verdict: satisfactory (729 P.)
- connect** verdict: good (751 P.)

Fastned With green electricity, friendly locations and good service, this Dutch provider is in the top group in three countries tested.

► The goal of the Dutch CPO is to build a network of 1000 fast charging stations in Europe, powered entirely by renewable electricity. There are already 310 such stations in the Netherlands, 55 in Germany and 12 in Belgium. Most of them shine with friendly design including lighting, roofing and good signage. However, the availability of toilets and

other amenities is higher in the Netherlands than in the other two countries. In terms of ease of use and technology, all stations were convincing, and the hotlines contacted by our test teams also received praise across the board. In its home country, Fastned even beats Ionity to win in the CPO category.



Hospitable: Fastned stations offer a lot of comfort.

- connect** verdict: good (776 P.)
- connect** verdict: good (784 P.)
- connect** verdict: very good (858 P.)

Shell Both in the Netherlands, the home country, and in Germany, the petroleum company's charging service scores satisfactory – partly because of some tricky technology.

► The charging network NewMotion, bought by Shell, also had its origins in the Netherlands, but now wants to grow across Europe. With 45 HPC charging stations in Germany and as many as 126 in the Netherlands, "Shell Recharge" was thus set as a candidate for our trips through these two countries. Many of the stations can be found at

Shell petrol stations on motorways and in cities, but also in industrial areas. Unfortunately, in both countries weather protection is usually lacking, but toilets and shops – and in the Netherlands also restaurants – can usually be found. The technology of the charging stations proved to be a little tricky in some cases, but the quality of service was okay.



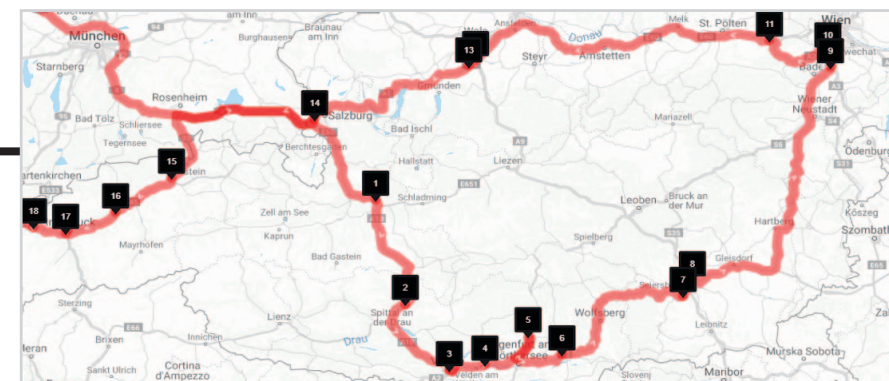
Tricky: Some Shell chargers caused problems in the test.

- connect** verdict: satisfactory (720 P.)
- connect** verdict: satisfactory (743 P.)

Test route Austria

umlaut's test drivers covered of total of 1,374 kilometres in Austria – plus another 394 kilometres for the approaches and departures to and from Germany and Switzerland. They made a total of 19 charging stops in the Alpine republic.

► The test drives in Austria took place from September 20th to 24th, 2021. For the most part, the testers drove the Porsche Taycan Turbo S, which Porsche kindly provided to us in order to conduct the tests. In addition, the teams also drove to some Austrian stations with the Audi e-tron 55 quattro, which was mainly used for the southern Germany tour (see also page 76). Thus, the umlaut drivers were also able to test various charging stations of the respective CPOs with different e-cars in Austria. Among the charge point operators active in Austria, Da emobil, Ionity, Kelag and



Alpine Tour

The umlaut test teams for Austria completed their test drives between September 20th and 24th, 2021. They covered exactly 1,768 kilometres, including approaches and departures.

Smatrixs, were visited and tested. Where possible, five, but at least four different locations per provider were included in the evaluations. In Austria, too, the test drivers of course paid close attention to the required Corona safety measures, such as wearing masks outside the vehicles and maintaining sufficient distances.

To authenticate themselves at the charging stations, the testers used the cards and apps of the tested EMPs as far as possible – in Austria, in particular, the offer from Smatrixs as well as the German EMPs. Where this was not possible, the CPO's apps or ad-hoc charging offerings were used.

Da emobil Currently focused mainly on western Austria, the provider operates pleasant charging stations and offers convincing charging comfort.

► The subsidiary of the two Tyrolean companies Fiegl + Spielberger and Gutmann is currently mainly active in western Austria, but wants to expand its charging network over the entire Alpine Republic. At the time of the test, Da emobil already offered twelve HPC charging points, of which our test drivers visited five. There is still room for

improvement in terms of signage, but the orange columns are very eye-catching. In addition, the stations were well lit and at least some of them were also covered. Toilets were found in neighbouring fast-food restaurants or petrol stations. The service, information content, payment process and hotline were all convincing.



Roof over your head: Some stations protect from rain.

- connect** verdict: good (778 P.)

Kelag The charging stations of the Carinthian energy company offer a decent charging experience overall – even if the testers had some points of criticism in detail.

► As one of the leading energy service providers in Austria, the Kelag Group, based in Carinthia, also offers a charging network with six HPC stations at the time of the survey, of which umlaut visited four. There were always petrol stations and/or fast-food restaurants in the vicinity – and thus also toilets. The signage could be better, and the tested sta-

tions did not score well in terms of roofing either. Their lighting was okay in three out of four cases. The operation of the charging stations proved also okay, their willingness to provide information was actually high. The company offers its own app and tariffs for problem-free billing in the test, but several EMPs are also supported.



Hot wire: The hotline was convincing in the test.

- connect** verdict: satisfactory (734 P.)

Smatrixs In addition to its role as EMP, Smatrixs is also active as a CPO. Its charging stations offer reliable technology and overall good comfort.

► Like EnBW in Germany, Smatrixs in Austria fulfils both the role of EMP and CPO. Its network of charging points also includes 71 HPC stations, five of which were used by the test drivers. These test locations were not really well signposted, and users also have to do without a roof – but we had little to criticise in terms of lighting.

One location was near a shopping centre, others had petrol stations or fast-food restaurants nearby, so that visits to the toilet were also ensured. The charging instructions of the stations could be a little better, but overall charging and payment worked well. Smatrixs's hotline also left a convincing impression with umlaut's test teams.



Informative: Smatrixs stations provide good information.

- connect** verdict: good (780 P.)

Test route Switzerland

Their route through the Swiss Confederation led our test drivers through 543 kilometres with 22 charging stops. A further 169 kilometres were covered on the way to and from neighbouring countries.

The test teams completed the test drives through Switzerland between September 27th and October 1st, 2021.

As in Austria, the Porsche Taycan Turbo S (see page 84) was predominantly used on the Swiss tour – supplemented at times by the Audi e-tron 55 quattro (see page 81), which was also used in southern Germany and Austria.

In this case, too, our objective was to visit different charging stations of the tested CPOs with different e-cars, as far as possible.

The Swiss test schedule included the CPOs Agrola, GoFast, Ionity, Move and Socar.



Through the Land of the Confederates

The umlaut test teams visited Switzerland between September 27th and October 1st. On a total of 712 kilometres including approaches and departures, they made a total of 22 charging stops there.

In order to be able to assess the Swiss EMP offers, the testers primarily used the apps and e-mobility offers of EVPass, Move and Swisscharge in addition to the German EMP solutions. Where this was not possible, apps offered by the CPOs themselves or the

web links communicated on the pillars were used, or ad hoc options such as charging by credit card. Of course, our test drivers also paid utmost attention to all the necessary Corona security measures in Switzerland.

Agrola The Swiss energy service provider and petrol station operator has a decent charging offer overall – with room for improvement in some details.

Agrola is a Swiss energy service provider based in Winterthur. In addition to conventional fuels, it also offers charging points at its petrol stations. This ensures good lighting, toilets and shop facilities – coffee breaks, however, are limited to offerings of the respective petrol station. Until the car is connected, the assignment of the charging points in the app

remains unclear. Apart from that, and with the exception of an apparently defective station, refuelling went without problems. The current charging power is shown on the display, but info on the amount of electricity used only appears after charging is complete. We have nothing to criticise about the payment process, but more payment options would be nice.



Fuel stop: Agrola chargers can be found at petrol stations.

connect verdict: satisfactory (664 P.)

GoFast The stations of the quite large and constantly growing Swiss fast charging network offer e-car drivers a good charging experience.

The Zurich-based company focuses on the development and operation of a fast charging network in Switzerland. According to the company, all GoFast charging points are powered 100% by green electricity. The majority of the HPC stations available in the Swisscharge network come from this provider – other EMPs are also supported.

The mostly roofed and well-lit charging stations are easy to recognise even from a distance. The operation of the charging stations does not pose any riddles either – even though two out of our test programme did not work. The friendly hotline made an effort, but ultimately couldn't help either. Payment went smoothly.



Informative: GoFast chargers display everything important.

connect verdict: good (774 P.)

Move The charging station operators Groupe e and Primeo Energie operate jointly under the Move brand. In our test, their offer scores convincingly.

The charging station operators Groupe e and Primeo Energie are behind the Move network, which also operates as an EMP. Our test drivers visited three locations of Groupe e and two of Primeo. At many of them, the charging cables were very short, so that with some e-cars you have to park between the marked spaces. There were

toilets at all locations, restaurants only at motorway stations – but at least snack machines at the rest. The user guidance of the charging stations and the information displayed during the charging process fulfilled all the testers' wishes. Also top notch: while a charging station was initially faulty, the hotline proved to be very friendly and helpful.



Short tied: Longer cables would often be good.

connect verdict: good (803 P.)

Socar The Azerbaijan mineral oil company operates fast-charging stations along Swiss motorways and offers e-drivers a good charging experience there.

The State Oil Company of the Azerbaijan Republic, Socar for short, is headquartered in Baku, Azerbaijan – but in addition to petrol stations, it also operates charging points in Switzerland with a focus on High Power Charging (HPC). The stations, which are mainly located along Swiss motorways, are part of the Swisscharge network, but can also be used via

roaming. The signposting of the locations is first-grade, and there were also toilets at all of them – as well as kiosks and/or snack machines. The charging stations were easy to use, they displayed all important information while charging and did not cause any problems when paying. The hotline was also convincingly friendly and competent.



Friendly: Both chargers and hotline were convincing.

connect verdict: good (752 P.)

Results CPOs Austria and Switzerland

Provider	Austria				Switzerland				
	Ionity	Smatrics	Da emobil	Kelag	Ionity	Move	GoFast	Socar	Agrola
Web	ionity.eu/de	smatrics.com	www.da-emobil.com	www.kelag.at/energiewelt	ionity.eu/de	www.move.ch	www.gofast.swiss	www.socarenergy.ch/de-ch	www.agrola.ch/de
Coverage									
Number of HPC charging points (min. 150 kW) / DC / AC	64 / 12 / 6	71 / 241 / 720	12 / 43 / 107	6 / 51 / 213	44 / - / -	50 / 233 / 904	102 / 155 / 110	10 / 6 / 5	24 / 29 / 30
Locations and Environment									
Signage / Lighting / Weather Protection	insuff. / v. good / insuff.	insuff. / v. good / insuff.	insuff. / v. good / suff.	suff. / good / insuff.	v. good / v. good / insuff.	satisf. / v. good / insuff.	insuff. / good / good	v. good / insuff. / insuff.	insuff. / v. good / v. good
Toilets / Restaurants / Shops, Kiosks nearby	v. good / good / v. good	good / v. good / v. good	v. good / good / v. good	v. good / good / v. good	satisf. / v. good / v. good	v. good / suff. / good	insuff. / insuff. / satisf.	v. good / insuff. / v. good	suff. / insuff. / v. good
Charging Stations									
Usability / Placement / Display	good / v. good / v. good	satisf. / satisf. / v. good	satisf. / v. good / v. good	satisf. / v. good / v. good	good / satisf. / v. good	satisf. / suff. / v. good	good / v. good / v. good	good / v. good / v. good	insuff. / v. good / v. good
Clear indication of charging performance / functionality / Info content	good / v. good / v. good	good / good / v. good	good / good / v. good	v. good / good / v. good	v. good / v. good / v. good	insuff. / v. good / good	insuff. / satisf. / v. good	v. good / v. good / v. good	insuff. / good / insuff.
Signposting of the car park / Parking space marking / Size	insuff. / v. good / v. good	good / s. good / v. good	insuff. / v. good / v. good	good / v. good / v. good	v. good / v. good / v. good	v. good / v. good / v. good	v. good / v. good / v. good	v. good / v. good / v. good	insuff. / v. good / v. good
Service/Hotline									
Hotline number on charging station / costs	very good / very good	very good / very good	very good / very good	very good / very good	very good / very good	very good / very good	very good / very good	very good / very good	very good / very good
Multi lingual / Availability / Troubleshooting	v. good / v. good / v. good	good / v. good / satisf.	good / v. good / v. good	good / v. good / v. good	v. good / v. good / v. good	good / v. good / v. good	good / v. good / satisf.	satisf. / v. good / v. good	good / v. good / satisf.
Payment									
Supports Ad-hoc charging / Price comm. at Station or Web	very good / very good	very good / satisf.	very good / very good	very good / satisf.	very good / very good	very good / very good	very good / very good	very good / very good	good / very good
Credit card / Direct Debit (Giro Pay/SEPA) / PayPal	🟢/🔴/🔴	🟢/🔴/🔴	🟢/🟢/🟢	🟢/🔴/🟢	🟢/🔴/🔴	🟢/🔴/🔴	🟢/🔴/🔴	🟢/🔴/🔴	🟢/🔴/🔴
Test results									
Points Coverage (max.100)	89	100	35	30	50	70	95	28	39
Points Locations/Environment (max.250)	183	165	150	137	184	173	137	125	134
Points Charging stations (max.300)	257	248	268	265	277	253	250	297	211
Points Service/Hotline (max.150)	150	128	145	147	150	147	132	142	130
Points Payment/Price transp. (max.200)	160	139	180	155	160	160	160	160	150
connect	VERDICT								
	max. 1000								
	839	780	778	734	821	803	774	752	664
	good	good	good	satisfactory	good	good	good	good	satisfactory

connect
BEST IN TEST

connect
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Our test vehicle Audi e-tron 55 quattro

For the second time, an electric Audi was in use on our test tours – this time the Ingolstadt company kindly provided it to us directly.

From Audi, our test drivers were provided with an e-tron model in the elegant Sportback variant and with the engine version "55 quattro". This offers 300 kW/408 hp and accelerates from zero to one hundred kmph in 5.7 seconds. Audi states a WLTP range of up to 452 km, the 95 kWh battery can be charged with up to 150 kW – from ten to 80 percent state of charge in around 30 minutes. The Audi website offers a well-designed online calculator for the range achievable under various everyday conditions. It suggests a long-distance range of around 370 km. With these capabilities, the electric Audi served us excellently.



Ready for action: the umlaut testers used the Audi e-tron 55 quattro to complete most of their north and south routes through Germany as well as journeys in the Alpine region.

Test route Benelux

In order to include the Benelux countries in our test for the first time this year, two test drives took us through these three neighbouring countries.

■ The Benelux countries had two test teams split up on separate routes: One tour led through the Netherlands between September 27th and 29th. As part of a schedule of 23 charging stops, stations from Allego, Fastned, Ionity and Shell-Recharge were visited – with five or six charging stations per provider. The other route led through Belgium and Luxembourg from September 29th to October 1st, 2021, visiting 21 charging stations in Belgium and two in Luxembourg. In Luxembourg, the testers focused on the provider Chargy, while in Belgium, the programme included five or six charging stations each from Allego, Fastned, Ionity

and Powerland. In total, both tours covered 1942 kilometres plus 466 kilometres for approach and departure. The Benelux tours were mainly completed with the Polestar 2 (see page 83) kindly provided by Polestar and supplemented at some points by the Audi e-tron 55 quattro. Since German-speaking users are unlikely to use French-, Belgian- oder Dutch-language apps, the testers in Benelux relied on the German EMP offerings wherever possible. Even though the signage in these countries is mostly in French, the pillar controls rarely caused any communication problems thanks to the languages that can be selected there.



Belgium, Netherlands, Luxembourg

Between September 27th and October 1st, the uumlax test teams drove 2408 kilometres through the Benelux countries, including arrivals and departures.

Chargy

The number of HPC columns at the Luxembourg-based provider is still modest, but it is expected to grow quickly. Chargy could also improve its service.

► Under the Chargy brand, the Luxembourg energy provider Eida offers a network of charging stations in its home country. In addition to the in-house payment card mKaat, it is also possible to charge there ad-hoc or by roaming via EMPs from neighbouring countries. The “Supercharge” fast chargers pump between 150 and 300 kW into the electric car. During our research, we found only four of them in the Grand Duchedom so far – although the operator plans to install 88 of them by 2023. The test drivers were able to visit two of them on their tour. Our evaluation is based on these two.

They searched in vain for signs and weather protection at the sites in the capital of Luxembourg and in the municipality of Junglinster, while the surrounding street lamps provided lighting. For toilet stops, nearby restaurants were an option in one case, neighbouring car dealerships in the other. The operation of the charging station was not entirely self-explanatory, but after the start there was complete information about the ongoing charging process. In one test case, the hotline number was not accessible with a German smartphone, and there is still room for improvement in ad-hoc charging and price communication.



Colourful: A „Supercharge“ fast charger.

connect verdict: sufficient (597 P.)

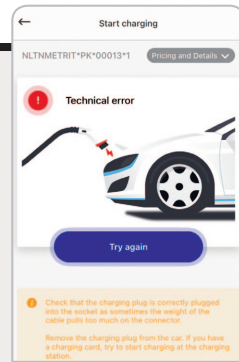
In practice: What to do in case of charging problems?

Charging points can also be defective from time to time, and problems between the charging point and the e-car are not entirely uncommon. There were also some faults during our test drives.

■ Defects or malfunctions at charging stations can occur. Therefore, never run the battery down to the limit – 5 to 8% state of charge should be left so that you can make it to the next location without stress if necessary. If there are frequent problems between certain types of charging points and electric car models, word will

get around quickly among electric drivers – if in doubt, it is better to avoid critical offers. In the case of isolated problems, it is often enough to disconnect and reconnect the cable. Next step: Simply try a neighbouring charging point. A call to the hotline can also be worth a try – their staff can restart charging points remotely, for example. If

that doesn't help either, there is often an alternative offer from another operator a few metres away, especially in motorway charging parks. When planning a tour, it is also worth checking in advance via the app whether any charging stations are marked as defective – even if this info is unfortunately not always 100% reliable.



E-Traffic jam: Not everything worked in our test either.

Powerland

The history of the Belgian company has led to the use of different types of charging stations. In addition, there were language barriers in two cases.

► Powerland, based in Poperinge, Belgium, is part of the petrol station operator Vandotec. It originally started as a distributor of charging points for Belgium, Luxembourg and France, but now also operates its own charging network. At the time of the survey, its range of services in Belgium also included 13 HPC fast-charging stations, of which our test drivers visited five. It was noticeable that the charging stations were always of different types – the testers and Powerland customers do not really have the chance to get used to a uniform operation. The test locations lacked signage and weather protection, with only

surrounding street lamps or neighbouring businesses providing light. The availability of toilets or shops in the vicinity was also mixed. Two of the chargers made the already inconsistent operation even more difficult by not offering a choice of languages other than Belgian. At least they all offered clear status information when loading. On the other hand, it proved again difficult that the less cosmopolitan among the Powerland chargers also provided information about the hotline only through voice announcements in the local language. There were also some hurdles with payment in the test.



Helpful: In the test, passers-by helped rather than the chargers.

connect verdict: sufficient (503 P.)

Results CPOs Benelux

Provider	Belgium				Luxembourg		Netherlands		
	Ionity	Fastned	Allego	Powerland	Chargy	Fastned	Ionity	Allego	Shell Recharge
Web	ionity.eu/de	fastnedcharging.com/de	www.allego.eu/de-de	www.powerland.be	chargy.lu/de	fastnedcharging.com/de	ionity.eu/de	www.allego.eu/de-de	www.shell.de/autofahrer
Coverage									
Number of HPC charging points (min. 150 kW) / DC / AC	44 / 6 / 3	12 / 4 / 4	11 / 111 / 4539	13 / 19 / 565	4 / - / 1500	310 / 156 / 61	39 / 4 / 2	95 / 282 / 14834	126 / 128 / 8583
Locations and Environment									
Signage / Lighting / Weather Protection	insuff. / good / insuff.	insuff. / v. good / v. good	insuff. / v. good / insuff.	insuff. / satisf. / insuff.	insuff. / good / insuff.	good / v. good / good	suff. / satisf. / insuff.	insuff. / v. good / insuff.	insuff. / v. good / insuff.
Toilets / Restaurants / Shops, Kiosks nearby	satisf. / satisf. / suff.	insuff. / insuff. / suff.	suff. / satisf. / insuff.	suff. / insuff. / satisf.	suff. / suff. / insuff.	v. good / suff. / good	v. good / good / v. good	v. good / good / insuff.	v. good / good / v. good
Charging Stations									
Usability / Placement / Display	good / good / v. good	good / v. good / v. good	satisf. / v. good / v. good	suff. / v. good / v. good	suff. / v. good / v. good	good / v. good / v. good	good / v. good / good	good / v. good / v. good	good / v. good / v. good
Clear indication of charging performance / functionality / Info content	v. good / good / v. good	v. good / v. good / v. good	v. good / v. good / v. good	v. good / v. good / v. good	v. good / v. good / v. good	good / good / v. good	v. good / v. good / v. good	v. good / good / v. good	v. good / satisf. / v. good
Signposting of the car park / Parking space marking / Size	suff. / v. good / v. good	v. good / v. good / v. good	v. good / insuff. / good	insuff. / insuff. / good.	suff. / insuff. / satisf.	v. good / v. good / v. good	satisf. / v. good / v. good	suff. / good / v. good	insuff. / good / v. good
Service/Hotline									
Hotline number on charging station / costs	very good / very good	very good / very good	very good / very good	very good / very good	very good / very good	very good / very good	very good / very good	very good / very good	very good / very good
Multi lingual / Availability / Troubleshooting	v. good / v. good / v. good	good / v. good / v. good	good / v. good / v. good	satisf. / v. good / suff.	satisf. / v. good / insuff.	satisf. / v. good / v. good	v. good / v. good / v. good	satisf. / v. good / v. good	satisf. / v. good / suff.
Payment									
Supports Ad-hoc charging / Price comm. at Station or Web	very good / very good	very good / very good	suff. / very good	insuff. / insuff.	suff. / insuff.	very good / very good	very good / very good	suff. / very good	very good / good
Credit card / Direct Debit (Giro Pay/SEPA) / PayPal	🟢/🟡/🔴	🟢/🟡/🔴	🟢/🟡/🔴	🔴/🟡/🔴	🟢/🟡/🔴	🟢/🟡/🔴	🟢/🟡/🔴	🟢/🟡/🔴	🟢/🟡/🔴
Test results									
Points Coverage (max.100)	89	42	51	45	82	93	27	56	58
Points Locations/Environment (max.250)	144	140	129	87	115	190	163	164	165
Points Charging stations (max.300)	270	296	258	241	250	270	291	257	257
Points Service/Hotline (max.150)	150	146	146	120	95	145	150	145	120
Points Payment/Price transp. (max.200)	160	160	145	10	55	160	160	129	143
connect VERDICT max. 1000	813 good	784 good	729 satisfactory	503 sufficient	597 sufficient	858 very good	791 good	751 good	743 satisfactory

connect BEST IN TEST

connect BEST IN TEST

Our test vehicle Polestar 2 Long Range Dual

The latest model from Volvo's e-car subsidiary has been on the market since autumn 2020. For our test drives, Polestar gave us the long-range model with dual motor.

■ The current top version of the Polestar 2 has only recently been released: With one electric motor per axle, the vehicle is available as a long-range version from 47,930 euros. It offers 300 kW/408 hp, zero to one hundred kpmh in 4.7 seconds. The WLTP range is 480 km, the 78 kWh battery can be charged with 150 kW. The manufacturer specifies a duration of around 40 minutes for a refill from 10 to 80% state of charge. This made the smart, powerful electric vehicle perfect for our test drives and charging stops. No less exciting for connect: the Polestar 2 is one of the first vehicles with the Android Automotive operating system. A connectivity test will follow in one of the next issues.



Fresh on the scene: The long-range version of the Polestar 2 with all-wheel drive, which has only recently become available, supported our test drivers especially on their Benelux tours.

Methodology



At every charging stop that the umlaut testers made on their several thousand kilometre tour, they examined and documented the technology, comfort and billing.

■ As with mobile telephony, there are network operators (charge point operators, CPOs for short) in the charging infrastructure – i.e. the actual operators of the charging points – and service providers (Electro Mobility Providers, EMPs), which provide apps and billing platforms. Some candidates such as EnBW, E.ON, Smatrics or Move fulfil both roles and were therefore considered in both categories. For the evaluation, test teams conducted trips through Germany, Austria, Switzerland, Belgium, the Netherlands and Luxembourg (see route descriptions on the previous pages). Depending on the size of the country, between two and six stations were visited per CPO. Registration and billing took place on the one hand via the tested EMPs and on the other hand via the ad hoc payment options supported by the CPO. During charging, the testers filled out extensive protocols about the

conditions on site, the course of the charging process and any errors that may have occurred. They also contacted the hotlines of the providers to test the service quality. As usual in our network tests, however, the charging rates themselves are not the subject of the evaluation.

Compared to last year, we have further developed our rating principles. For example, charging point coverage is now also included in the CPO assessment – after all, the best charging offer is of little use if there are only a handful of stations. We have upgraded practical aspects such as WC availability or functionality of the charging points, and reduced the score for other criteria such as shops or alternative payment methods. With a card reader and RFID sensor, we have also added some new features. A more detailed description of the methodology can be found at www.connect.de/ladenetztest or via the QR code.

Conclusion

Hannes Rügheimer,
connect author



As the top dogs of e-mobility in Germany, EnBW and Ionity are constantly going head-to-head. In our test this year, the Baden-Wuerttemberg-based utility company achieves a double victory – winning both the EMP category and the CPO rating. But Ionity also stands for reliable and convenient charging experiences – even if they come at a price. In Germany, the joint offer of well-known car manufacturers achieves a very good second place, and in Austria, Switzerland and Belgium it even wins among the CPOs.

In the Netherlands, Ionity also reaches the second place in the CPO category, but is beaten there by local hero Fastned, which is particularly convincing in its home country with especially pleasant and reliable charging stations. With this concept and the use of 100% green electricity, Fastned is also far ahead in our CPO rankings in Germany and Belgium.

The providers Smatrics and Da emobil in Austria, Move, GoFast, Socar in Switzerland and Allego in the Netherlands are also convincing. The latter, along with E.ON, also cuts a good figure in Germany.

Among the EMP offers we tested, Maingau stands out very positively alongside EnBW. E.ON and Shell Recharge in Germany, Smatrics in Austria as well as Move and Swisscharge in Switzerland can be recommended with minor restrictions.

Overall, it is pleasing to see how the expansion of e-mobility is progressing – but as demand grows, the requirements for the charging networks also continue to rise.

CAR CONNECT



The umlaut team (from left to right): e-mobility consultant David Trinkewitz, connectivity consultant Darani Yogalingam, e-mobility consultant Adrian Brinster and Hakan Ekmen, CEO Telecommunication.



Scan the QR code for an even more detailed description of our methodology.

Stage by stage: The test routes were designed for sensible reloading.

Our test vehicle Porsche Taycan Turbo S

For the third time in a row, the Zuffenhausen company is supporting our charging network test with a test vehicle. They have provided us with the current Taycan top model.

■ No less than the absolute top model in the range of all-electric Porsches was made available to the umlaut test drivers, especially for their tours through Austria and Switzerland.

The Taycan Turbo S Cross Turismo starts at 187,764 euros and offers 560 kW/ 761 hp (zero to one hundred kmph in 2.9 seconds) as well as the finest all-electric driving pleasure.

Porsche states a combined WLTP range of 419 km, but adds the more realistic long-distance range of 330 km. The net 83.7 kWh battery supports up to 270 kW of charging power – suitable charging points bring it from five to 80% state of charge in just under 23 minutes.



Extreme athlete: The elegant but no less racy electric Porsche was a real eye-catcher not only at the charging stops in Austria and Switzerland.