GRAND TOUR

This is the fourth time we have taken a close look at the quality of fast charging stations – as in the previous year, once again in Germany and five neighbouring countries.

According to official statistics, a total of 355,961 purely electrically powered cars were registered in Germany in 2021. Between January and August 2021, 228,084 e-cars were registered – 16.1 percent of all new registrations. Remarkably, the figures for pure electric cars are now even higher than those for plug-in hybrid models. A clear success – but one that also underlines how quickly the pressure on the charging infrastructure is increasing. Although the numbers are also growing here – as of 1 August 2022, the German Federal Network Agency reported 55,570 public standard charging points and 10,131 fast charging points in Germany. Compared to the previous year's figures (41 239 standard and 6845 fast charging points), this is certainly a good increase – but the number of e-cars is clearly growing faster. Competition for a free charging spot is increasing, not only in city centres, but also in the charging parks along motorways. This makes the reliability of advance information on the availability and operational readiness of charging points all the more important.

Real-time information increasingly important

For the providers of charging points (technical term: CPOs, Charge Point Operators) as well as those of charging apps and the payment infrastructure behind them (EMPs: Electric Mobility Providers), reliabe connectivity is therefore becoming increasingly important. It not only supports route and charging planning, but also helps to keep an eye on the charging power of the charging station and the filling level of the e-vehicle battery during charging. In addition to this real-time information, factors such as lighting, roofing or comfort offerings during charging also influence the charging experience. That is why it has become a tradition that our big charging network test takes all these aspects into account – with our focus once again on the on the long-distance-relevant HPC charging points ("High Power Charging" with at least 50 kW charging power). As in the previous year, we are not only consiering charging stations in Germany, Austria and Switzerland, but also in Belgium, the Netherlands and Luxembourg. And now the curtain is raised on the results, which reveal which EMPs and CPOs offer the most convincing services in or for these countries.

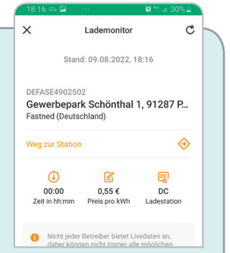
Hannes Rügheimer

GERMANY

EnBW

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

▶ The app and charging rates of the full-line supplier from Baden-Württemberg are still considered the gold standard among e-car drivers. It is not without reason that the German motorists club ADAC also cooperates with EnBW on its charging card offer. A large number of charging points in Germany and abroad can be used with the app or charging card, including the Ionity network again since 2021. Thus no e-car driver should be without the EnBW app and card in their charging repertoire. The app helps to select a suitable charging point and also provided reliable information about its availability. Still, it would be nice to add photos of the locations. With a good overall range of functions and a concise pricing model, EnBW once again deservedly takes the victory among the EMPs.



Intuitive and informative: the EnBW app helps e-drivers.

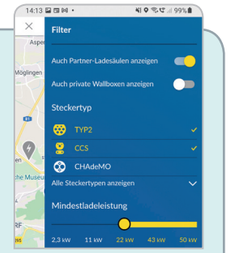
connect verdict: good (820 Points)

EMP

EWE

The energy supplier's EMP offer and the associated app still show potential for improvement – from credit card payments to price information.

▶ The "Punktladung" app of the former Energieversorgung Weser-Ems is closely linked to the provider's "Mobility Card". Even the usual credit card payment is not possible with this EMP. After all, without charging activities, only a one-off charge is due for the charging card – there is no monthly fee. However, the supported charging points should be more numerous, and the app repeatedly reacted somewhat sluggishly during the test. The charging instructions integrated into the app and the favourites function for locations are good. A rating and simpler route guidance to the selected location would be desirable. The availability display worked well in the test, but when filtering by charging power, the options for selection should go beyond 50 kW.



Limited usefulness: The filter should reach above 50 kW.

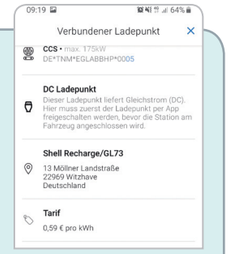
connect verdict: sufficient (500 P.)

EMP

Maingau

With "EinfachStromLaden", the name says it all: Simply charge electricity. The app and offer left only minor wishes unfulfilled and scored well overall.

▶ With its "EinfachStromLaden" brand, the energy supplier based near Offenbach am Main is an important player in the German e-mobility market. With its tariffs, Ionity stations can also be used. Therefore, Maingau is also a useful addition to the charging options available for e-car drivers. As a special feature, the app offers its own route guidance, but charging stops cannot be automatically integrated into it. Operation is intuitive, and real-time status information, practical filters and a useful favourites function help with the choice of a charging station. However, it would be nice to have more real-time information during the charging process. With high charging point coverage, transparent pricing and consistent payment, Maingau scores a good second place among the EMPs.



Informative: The app shows all details about the charging point.

connect verdict: good (800 Points)

EMP

Shell

The mineral oil company already plays an important role in e-mobility. However, the charging experience in the test – especially via the app – had room for improvement.

▶ 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 and neighbouring countries, including Ionity's fast charging stations. Access is provided via charging card or key fob. The real-time information on the availability of charging points gave no cause for complaint in the test. App operation and location search also worked well, but the testers see potential for improvement in the information about the location and especially about the ongoing charging process. The price communication could also be more comprehensible. Payment options and integration into the ClubSmart bonus programme, on the other hand, are positive aspects of the offer.

On-site data: The availability information was reliable.

connect verdict: sufficient (635 P.)

EMP

SWITZERLAND

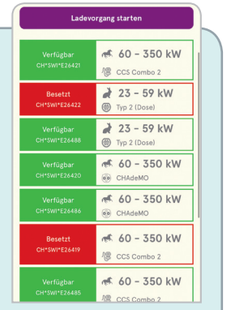
Move

The joint venture of major Swiss energy service providers offers e-mobilists in Switzerland an overall viable offer.

EMP

▶ 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, other CPOs in Switzerland and abroad are supported. Identification at the charging points is done via app or key fob.

The app is intuitive to use, but it would be helpful to have detailed instructions on the types of charging points of the various CPOs as well as more comprehensive information about the locations in advance. As in the previous year, the test drivers criticised the lack of reliability of the real-time data on availability – at one location, two out of five charging points were defective, but were still shown as available. Real-time information during charging would also be highly desirable. In contrast, the price communication, the payment options and the collection of points via a bonus programme were convincing.



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

connect verdict: satisfactory (703 P.)

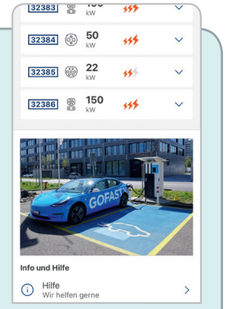
Swisscharge

The e-mobility provider from St. Gallen has significantly improved significantly compared to the previous year.

EMP

▶ The provider based in Gossau, St. Gallen, offers e-car drivers access to supported CPOs via app or charging card. Supported CPOs include those from Agrola, GoFast and Socar (see page 92 and following) – including a fairly large number of HPC charging points. However, the charging costs vary considerably, which is why it is better to check them before charging.

The app, which can be used intuitively for the most part, helps quite well. Meanwhile, it also provides helpful charging instructions for the supported CPO stations. Filtering according to real-time availability also worked well in the test. Another practical feature is that photos of at least Agrola and GoFast locations provide an impression of the conditions on site in advance. Compared to last year, when it still received the grade "satisfactory", this provider has obviously put quite a bit of work into the app and services and thus wins the EMP in Switzerland.



Preview: Photos inform about (own) charging points.

connect verdict: good (785 Points)

AUSTRIA

Smatrics

The Vienna-based provider sees itself as an all-rounder for e-mobility. It, too, has clearly improved on the previous year's result.

EMP

▶ Together with a large number of CPO partners, Smatrics provides a dense network of charging points in Austria and also in neighbouring countries via roaming. However, this leads to a rather complex pricing structure, in which the per-minute prices for charging roaming are categorised according to charging capacity. However, the charging costs valid for a charging point are clearly communicated in the app, and the operation is otherwise quite intuitive. Other positive features are the charging instructions for the different CPOs, a quite reliable availability status and information about the current charging capacity in the app in almost real time. It would be nice to have more payment options beyond credit cards. Compared to the previous year, in which this provider could only achieve the grade "satisfactory", Smatrics has also improved significantly. Austrian e-car drivers should therefore definitely install the Smatrics app on their smartphone.

Pictorial: Photos help to choose and find the stations.

connect verdict: good (780 Points)

Technology: Plug & Charge versus Autocharge

Plug in, charge, and payment happens automatically in the background – two different approaches compete for this kind of charging convenience.

■ "Plug & Charge", which is even defined as an ISO standard 15118, is primarily emanating from car manufacturers. It is therefore not surprising that the Ionity association, which is supported by several manufacturers, is one of the first providers to support this technology. EMPs and some CPOs, however, are not comfortable with it because they fear that the car manufacturers will compete with them for the billing business. This is why charging providers such as Fastned or EnBW took the initiative for the alternative "Autocharge": The vehicle sends a unique ID via the charging cable that identifies the car and that customers can store in their account with the charging provider. However, not all e-car manufacturers support this, and critics complain that Autocharge lacks encryption. Theoretically, charging stations could also support both variants – it remains to be seen which will prevail.

Good idea, controversial implementation: payment data should also flow via the charging cable – but some of the players have different interests.

Results Electromobility Providers (EMPs)

Providers		EnBW Mobility+	Maingau	Shell Recharge	EWE (Germany)	Smatrics (Austria)	Swisscharge (Switzerland)	Move (Switzerland)
Web		www.enbw.com/elektromobilitaet	www.maingau-energie.de	www.shell.de/autofahrer	www.ewe-go.de	smatrics.com	www.swisscharge.ch	www.move.ch
Supported HPC charging points (min. 150 kW) in respective country*.		7740	7992	2800	1955	2580	1871	1765
App: Usability								
Available for Android / iOS		+ / +	+ / +	+ / +	+ / +	+ / +	+ / +	+ / +
Usability / Instructions for charging points		very good / +	very good / +	very good / –	sufficient / +	very good / +	very good / +	very good / –
Overview of nearby locations		very good	very good	very good	very good	very good	very good	very good
Rate / Favour locations / Location info with photos		– / + / –	– / + / +	– / + / –	– / + / –	– / + / –	– / + / +	– / – / –
App: Functions								
Reliability of real-time data		very good	good	very good	very good	very good	very good	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 / Bonus programme		good / +	good / +	sufficient / +	good / –	satisfactory / –	satisfactory / –	good / +
Billing via credit card / SEPA direct debit / additional		+ / + / –	+ / + / –	+ / + / –	– / + / –	+ / – / –	+ / + / –	+ / + / –
Test results								
Points Charging point coverage	(max.100)	75	100	25	25	100	100	75
Points App Usability	(max.200)	160	155	140	130	150	170	130
Points App Functions	(max.300)	260	220	210	200	230	220	188
Points Payment/Price transparency	(max.400)	325	325	260	145	300	295	310
connect VERDICT	max. 1000	820 good	800 good	635 sufficient	500 sufficient	780 good	785 good	703 satisfactory
		connect BEST IN TEST				connect BEST IN TEST	connect BEST IN TEST	

* according to information from the EMPs and own research

Our test vehicle Audi e-tron GT quattro

Once again this year, the Ingolstadt company kindly supported us during our test drives – with their top electric model.

■ From Audi, our test drivers received the electric sports coupé e-tron GT and thus the top model among the e-cars from the Ingolstadt company. With a range of 475 km according to WLTP (net battery capacity: 83.7 kWh), the vehicle was well equipped for our test tours. And thanks to up to 270 kW of charging power, the e-tron GT was also quickly recharged during the charging stops. All-wheel drive, 640 Nm of torque, a maximum output of 350 kW (476 hp) and zero to one hundred in 4.1 seconds meant that driving fun was not neglected on the routes in between. The price list for this dream electric sports car starts at 104 000 euros.

Confident: The e-tron GT proved its performance and range on the route between Aachen and Stuttgart. It charges up to 232 km of range in 10 minutes.

Foto: Tomas K/shutterstock.com

Test route Germany

On their tour of Germany, the test drivers covered a total of 1873 kilometres with stops at 44 HPC charging stations of the tested CPOs.

■ This time, our test drivers took three routes through Germany: With the VW ID.4 (see page 96), they drove from Hamburg to Munich – and from there on to Austria. The Audi e-tron GT (see page 87) completed the tour from Aachen to Stuttgart. And the Tesla Model Y (see page 95) visited some stations in North Rhine-Westphalia on its way to the tested charging stations in Belgium and the Netherlands. In total, the drivers covered 1873 kilometres in Germany alone. All test drives took place at the end of August and beginning of September 2022.

At least five different locations were included in the evaluation of each German Charge Point Operator. For this purpose, we planned our test routes so that we could visit several charging stations of a CPO with different e-cars. The test drivers then filled out extensive questionnaires at each charging stop about the charging station itself and its overall equipment, the actual charging process as well as about their test calls to the providers' hotlines.

For the EMP assessment, they used the apps of the assessed German electric mobility providers as far as possible. Since the CPOs Allego, Fastned, Ionity and Shell Recharge are active in several of the countries we tested, we have summarised their descriptions on page 90 in the "International" category of this article. Their individual results for Germany can be found in the table below.

Tours across the country

We conducted the test drives across Germany with three test vehicles on three different test routes at the end of August and beginning of September 2022.

Aral Pulse

Not only, but also at its petrol stations, Aral is quickly building up a network of fast-charging stations. They make a good impression.

▶ The mineral oil company began building its own charging network in 2021. Often, but not exclusively, the charging stations are found at Aral petrol stations. In September 2022, the provider operated around 860 charging points at over 150 locations, according to its own information. By the end of 2025, more than 5000 charging points are planned.

On our test drives, the stations we visited made a very good impression. Many of the charging points already have a card reader, and their operation and information presentation were also convincing. The hotline also did a good job. The test drivers see some potential for improvement in cable management, signage and weather protection.

Electricity pumps: Overall, charging at Aral went well.

connect verdict: good (791 Points)

CAR CONNECT CPO

EnBW

Once again, the Baden-Württembergers have won first place among the German CPOs – with convincing results in all test categories.

▶ For EnBW, we have counted 1593 HPC fast charging points (with at least 150 kW) – and they are not only located in the home state of the Baden-Württemberg energy supplier. Also, there is an increasing number of charging parks, such as the one at the Kamen intersection (A1 and A2 motorways) with 52 fast charging points alone. These new "hubs" look almost futuristic and offer a lot of convenience. However, as the testers also visited smaller stations, they still identified potential for improvement – for example in the equipment of some locations or in some cases in the form of missing services such as Wi-Fi or video surveillance. But overall, EnBW deservedly wins our fourth charging network test.

Reliable: E-cars do very well with EnBW stations.

connect verdict: very good (853 Points)

CPO

E.ON

The subsidiary "Charge-ON" of the energy company has a respectable charging network, but 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 considerable charging network through its subsidiary "Charge-ON", which now has 217 HPC charging points. In addition to its own charging card and the "E.ON Drive" app, the provider supports various EMPs there.

Three of the tested stations were located at motorway service stations with corresponding comfort and service offerings. Other locations, however, are not signposted and also lack other amenities. At one station, charging with the test vehicle did not work – even a remote restart by the hotline did not provide a remedy.

Charging blockage: One station simply did not want to charge.

connect verdict: satisfactory (650 P.)

CPO

EWE

EWE Go cooperates with the fast food chain McDonalds – in the test at all visited locations. Overall, the charging convenience shows potential for improvement.

▶ EWE also has a subsidiary, "EWE Go", to operate its charging network. In our count, we identified 69 HPC charging points. E-mobilists can use EWE's own "Mobility Card" or an app. However, the charging points are also open to other EMPs, and their location near McDonald's restaurants makes them an inviting place to take a break.

Unfortunately, the charging points are not even well lit in the fast-food car parks, and free Wi-Fi was also absent in the test. The charging cables often lie chaotically on the floor. The operation of the charging stations is okay, but the information on charging performance should be clearer. The hotline was okay.

Fast Food & Fast Charging: EWE also has HPC stations.

connect verdict: sufficient (635 P.)

CAR CONNECT CPO

Results CPOs Germany

Provider		EnBW	Aral Pulse	Ionity	Fastned	Shell	Allego		E.ON Charge-ON	EWE Go
Web		www.enbw.com/elektromobilitaet	www.aral.de/de/global/retail/pulse	ionity.eu/de	fastnedcharging.com/de	www.shell.de/mobilitaet/laden	www.allego.eu/de-de		www.eon.de/de/pk/e-mobility.html	www.ewe-go.de
Coverage										
Number of HPC charging points (min. 150 kW)*		1593	860	460	130	154	368		217	69
Locations and Environment										
Signage / Lighting / Weather Protection		insuff. / good / satisf.	insuff. / v. good / insuff.	v. good / v. good / insuff.	satisf. / very good / very good	suff. / satisf. / insuff.	insuff. / good / insuff.		good / good / suff.	insuff. / suff. / insuff.
Toilets / restaurant, snack bar or vending machine / seating area		satisf. / good / suff.	v.good / v. good / insuff.	v. good / v. good / suff.	good / good / satisf.	v. good / v. good / suff.	suff. / satisf. / insuff.		v. good / good / insuff.	satisf. / very good / insuff.
Free Wi-Fi / service station / surveillance camera		insuff. / insuff. / satisf.	insuff. / satisf. / insuff.	insuff. / insuff. / insuff.	insuff. / insuff. / satisf.	suff. / v. good / insuff.	insuff. / insuff. / insuff.		insuff. / suff. / suff.	insuff. / insuff. / insuff.
Charging Stations										
Usability / Placement / Display		v. good / v. good / v. good	v. good / v. good / v. good	v. good / v. good / satisf.	v. good / v. good / good	good / v. good / v. good	v. good / v. good / v. good		good / v. good / good	satisf. / v. good / v. good
Clear indication of charging performance / functionality / Info content		v. good / v. good / v. good	v. good / good / 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		satisf. / good / good	satisf. / v. good / v. good
Signposting of the car park / Parking space marking / Size / Cable management		v. good / v. good / v. good / v. good.	good / good / v. good / suff.	good / good / v. good / v. good	satisf. / suff. / v. good / good	insuff. / v. good / v. good / v. good	v. good / satisf. / suff. / suff.		satisf. / suff. / v. good / good	v. good / good / satisf. / insuff.
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		satisf. / v. good / good	satisf. / v. good / satisf.	v. good / v. good / satisf.	v. good / v. good / satisf.	good / v. good / satisf.	satisf. / v. good / good		satisf. / v. good / satisf.	satisf. / v. good / good
Payment										
Credit card: reader or QR code / additional payment methods		good / satisf.	very good / satisf.	good / very good	good / insuff.	very good / insuff.	very good / suff..		good / insuff.	good / satisf.
Price transparency / Plug & Charge or Autocharge supported		v. good / ⊕ (Autocharge)	v. good / ⊕ (Plug & Charge)	v. good / ⊕ (Plug & Charge)	v. good / ⊕ (Autocharge)	very good / ⊖	very good / ⊖		very good / ⊖	very good / ⊖
Test Results										
Points Coverage	**(max.100)**	**100**	**50**	**25**	**25**	**25**	**25**		**25**	**25**
Points Locations/Environment	**(max.250)**	**163**	**158**	**182**	**205**	**142**	**129**		**151**	**93**
Points Charging stations	**(max.300)**	**288**	**264**	**264**	**254**	**272**	**271**		**218**	**247**
Points Service/Hotline	**(max.150)**	**137**	**133**	**137**	**134**	**130**	**132**		**131**	**135**
Points Payment/Price transp.	**(max.200)**	**165**	**186**	**175**	**150**	**150**	**145**		**125**	**135**
connect VERDICT	**max. 1000**	**853 very good**	**791 good**	**783 good**	**768 good**	**719 satisfactory**	**702 satisfactory**		**650 satisfactory**	**635 ausreichend**

* according to information from the CPOs and own research

connect BEST IN TEST

Our test vehicle BMW i4

The Bavarian carmaker kindly supported our test drives with its all-electric sedan i4 eDrive 40.

■ BMW itself describes the i4 as a "Gran Coupé". The Bavarians provided an i4 eDrive40 for our tests. With 250 kW (340 hp) of power, a maximum torque of 430 Nm and acceleration from 0 to 100 km/h in 5.7 seconds, the model is indeeed a pleasure to drive. 80.7 kWh battery capacity offers up to 590 km range according to WLTP. With supported charging powers of up to 205 kW, this test vehicle also kept the duration of charging stops within reasonable limits: BMW specifies 31 minutes for a charge from 10 to 80 percent. We drove the i4 mainly in Switzerland.

Goes fast: The BMW i4 offered driving pleasure and fast recharging (under optimal conditions with up to 205 kW), especially on the test drives in Switzerland.

CPO

Ionity

The joint project of several car manufacturers is far at the top in all countries tested. In Austria and Switzerland, it wins the CPO award.

▶ Ionity is backed by the car manufacturers BMW, Ford, Hyundai, Mercedes-Benz and Volkswagen, including its Audi and Porsche brands. Their goal is a pan-european network of HPC charging stations in which the distance between two stations never exceeds 120 kilometres. Ionity has already come quite close to this, which is also proven by the fact that this provider is present in five of the six countries we tested. The Ionity stations are an important backbone for both e-car drivers and our testers, especially on longer tours.

Drivers of the aforementioned brands often enjoy special conditions – all others pay sometimes significant surcharges for the use of the modern and fast stations. In return, however, they receive convincing charging comfort and unproblematic operation as well as clear price conditions in all the countries visited by our test drivers. In Austria, Belgium and the Netherlands, Ionity offers DC and AC stations in addition to HPC – mostly due to local legal requirements.

Ionity can be found at motorway service areas, car parks or, abroad, also in industrial areas or comparable locations. The quality of the locations is generally high, which usually includes good lighting. Only in terms of weather protection do Ionity stations leave something to be desired. There are differences in the proximity of catering facilities and toilets depending on the location and country. Overall, however, Ionity is in the top group in all the countries tested. In Austria, Switzerland and Belgium, Ionity won the test in the CPO category – in Belgium and the Netherlands it came second, in Germany third.

Lighthouse: The light rings indicate free stations.

Local touch: Abroad, Ionity uses different stations.

connect Verdict: good (783 Points)

connect Verdict: good (790 Points)

connect Verdict: good (801 Points)

connect Verdict: good (802 Points)

connect Verdict: good (755 Points)

CAR CONNECT CPO

Allego

The Dutch provider lands more or less in the midfield in the three tested countries. Above all, the comfort score of the locations is mixed.

▶ The Netherlands-based provider is building a charging network with numerous locations in the Netherlands, Belgium and Germany – including a growing number of HPC stations. You can pay at the stations with Allego's own app "Smoov", but some EMPs are also supported. There were shortcomings in weather protection in all three countries tested. Whether e-drivers can hope for toilets, restaurants or other amenities near the charging stations depends on the respective location. Overall, the operation and information content of the charging stations are good, and Allego's hotlines also made an overall good impression.

Variable: Allego uses different charging stations.

connect Verdict: satisfactory (702 P.)

connect Verdict: sufficient (641 P.)

connect Verdict: satisfactory (700 P.)

CPO

Fastned

In Belgium and the Netherlands, Fastned takes the test victory this time. With its friendly designed sites, it also does well in Germany.

▶ Many Fastned locations are real oases of well-being – the good service is accompanied by the good conscience of charging green electricity. The Dutch CPO's goal is to build a network of 1000 fast-charging stations in Europe. The numbers, which have grown compared to the previous year, show that the provider is well on track with this. Lighting, roofing and good signage are almost always convincing. However, the availability of toilets and restaurants was higher in the Netherlands and Germany than in Belgium. In terms of ease of use and technology, however, all the stations are impressive, and the hotlines deserve praise everywhere. Additional payment options would be nice.

Hospitable: Fastned stations offer a lot of comfort.

connect Verdict: good (768 Points)

connect Verdict: good (805 Points)

connect Verdict: good (838 Points)

CPO

Shell

Both in its home country of the Netherlands and in Germany, the mineral oil company's charging offer is satisfactory. But the locations could be more convenient.

▶ The charging network NewMotion, which was bought by Shell, also had its origins in the Netherlands but wants to expand across Europe. With 154 HPC charging stations in Germany and 224 in the Netherlands, the numbers have increased significantly since last year. Many stations are found at Shell filling stations on motorways and in cities, but also in industrial areas. In both countries, weather protection is unfortunately usually lacking, but toilets and refreshment facilities can usually be found. In the Netherlands, the lighting at the stations is better than in Germany. The operation of the charging stations and the service quality of the hotline were OK in both countries.

Plain: Shell columns often lack a nice environment.

connect Verdict: satisfactory (719 P.)

connect Verdict: satisfactory (700 P.)

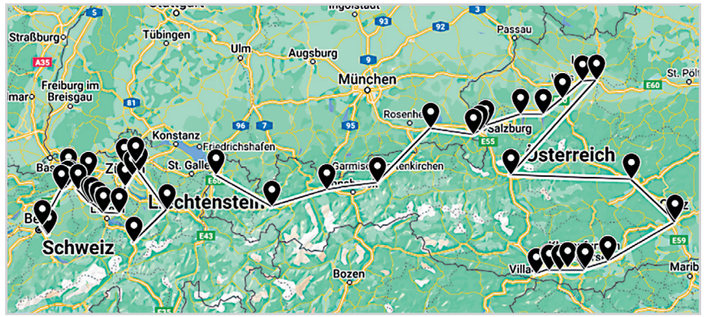
AUSTRIA

Test route Austria

Our test drivers covered a total of 1,119 kilometres in Austria – plus another 400 kilometres to and from Germany and Switzerland. They made a total of 25 charging stops in the Alpine republic.

■ The test drives in Austria took place at the end of August and beginning of September 2022. The VW ID.4 (see page 96) was the main vehicle used, which continued its tour of Germany from its final destination in Munich to the neighbouring country to the south.

Our teams visited and tested the charge point operators Da emobil, Ionity, Kelag and Smatrics EnBW, who are active in Austria. For their evaluation, the test drivers visited ideally five, but at least four different locations per provider. To authenticate at the charging points, they used the cards and apps of the tested EMPs as far as possible – in Austria in particular the offer of Smatrics as well as those of the German electric mobility providers. In addition, ad-hoc charging was used with the payment option credit card – depending on the implementation on site via a card reader at the charging station or via the CPO's own apps.



Alpine tour

Our test teams for Austria completed their test drives at the end of August and beginning of September 2022 primarily with the VW ID.4. In the process, they covered around 1520 kilometres, including arrivals and departures.

CPO CAR CONNECT

Da emobil

The provider, which currently focuses mainly on western Austria, also operates HPC charging stations and offers satisfactory charging comfort there.

▶ The subsidiary of the two Tyrolean companies Fiegl + Spielberger and Gutmann still focuses its activities on western Austria, but wants to expand its charging network to the entire Alpine Republic. Since our test in the previous year, the number of HPC charging points offered has risen to 25, of which our test drivers visited six. There is room for improvement in the signage, but at least the stations were well illuminated and some of them were even covered. WCs were found in neighbouring fast food restaurants or petrol stations – but not at two locations in business parks. Service, information content, payment process and hotline were convincing.

Off track: Some stations are located in industrial parks.

connect Verdict: satisfactory (659 P.)

CPO

Kelag

The Carinthian energy company is expanding the number of its HPC charging stations – but the overall charging experience there is still capable of improvement.

▶ As one of the leading energy service providers in Austria, the Kelag Group, based in the federal state of Carinthia, also offers a charging network with 22 HPC stations at the time of the survey, of which our testers visited five. There were petrol stations and/or fast food restaurants in the vicinity – and thus also toilets. The signposting was good, lighting was generally available, but the tested stations could not score with a roof or other comfort. The operation of the charging stations was OK, and they provided a high level of information. The company offers its own app and tariffs for problem-free billing in the test, but several EMPs are also supported.

Can be optimised: The charging experience leaves room for improvement.

connect Verdict: sufficient (638 P.)

CPO

Smatrics EnBW

Besides being an EMP, Smatrics is also active as a CPO. Its charging stations offer an overall good charging experience.

▶ Like EnBW in Germany, Smatrics in Austria acts not only as an EMP but also as a CPO. On the Austrian market, both companies cooperate in the CPO sector. The charging network now includes 164 HPC charging points, of which our test drivers visited five. These test locations were not signposted and users also had to do without a roof – but the lamps at the charging points provide good lighting. Fast food or other restaurants in the vicinity provide catering and toilets. The operation of the charging stations did not pose any riddles, and payment also worked well. The testers also had no complaints about the hotline.

Info-friendly: Smatrics stations provide good information.

connect Verdict: good (779 Points)

Test route Switzerland

Their route through Switzerland took our test drivers 544 kilometres to 22 charging stops. A further 170 kilometres or so were spent driving to and from neighbouring countries.

■ For their test drives through Switzerland, our teams primarily drove the BMW i4 (see page 89) in early September 2022. The Swiss test programme included the CPOs Agrola, GoFast, Ionity, Move and Socar. Given the relatively small area of the country compared to Germany, the objective of our test route planning was to visit at least four locations of each Swiss CPO.

In order to initiate the charging processes and to pay afterwards – and thus also to be able to assess the Swiss EMP offers – the testers primarily used the apps and e-mobility offers of Move and Swisscharge in addition to the German EMP solutions. Furthermore, the ad-hoc options were on the test programme – depending on the provider and charging station type, for example by credit card via a card reader or via QR code, which usually led to the respective CPO's own app.

Through the land of the Swiss Confederates

The test drivers visited Switzerland at the beginning of September 2022, covering a total of 714 kilometres including arrivals and departures. They made a total of 22 charging stops.

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 stations located at the petrol stations of the same name. This provides good lighting and roofing for the columns, plus toilets as well as offers for shopping or vehicle care – during the coffee break, however, one has to be content with the petrol stations' assortment. Compared to last year, the identification of the charging points has improved – stickers now help. However, the charging stations are silent about the supported charging power, which only appears on the display after charging has started. The hotline is easy to reach and friendly, but could not really help in the test.

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

connect Verdict: satisfactory (690 P.)

CAR CONNECT CPO

GoFast

The stations of the steadily growing Swiss fast charging network offer a good charging experience to e-car drivers.

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

The well-lit and, in our test, mostly roofed charging stations are easily recognisable from a distance. Toilets and restaurants or snack bars are usually not far away either. The charging stations did not pose any riddles and provided all the necessary status information. The hotline also proved to be competent and payment went smoothly.

Informative: GoFast stations display everything important.

connect Verdict: good (773 Points)

CPO

Move

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

▶ Behind the Move network, which also operates as an EMP, are the charging operators Groupe e and Primeo Energie – the charging stations are operated by one of the two, depending on the location. The signage could be better, but all the stations visited in the test were illuminated. There were also toilets at all locations, but restaurants only at the motorway stations – at least there were snack machines at the remaining ones. The user guidance of the charging stations and the information displayed during the charging process fulfilled all the testers' wishes. During the test calls to the hotline, the staff there was friendly and helpful, but did not have remote access to the charging station.

No puzzles: Move columns were easy to operate.

connect Verdict: satisfactory (724 P.)

CPO

Socar

The Azerbaijan Petroleum Company operates fast chargers along the motorways in Switzerland. However, the charging experience could be improved in details.

▶ The State Oil Company of the Azerbaijan Republic, Socar for short, is headquartered in Baku, Azerbaijan – and in addition to petrol stations, it also operates charging points in Switzerland with a focus on High Power Charging (HPC). The charging 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 top-notch, and there were also toilets at all of them, as well as kiosks and/or snack machines. However, the locations had to pass regarding other well-being criteria. On the other hand, the charging stations were easy to use and displayed all important info when charging. Additional options for payment would be good.

Focused: The charging stations do their job without complaint.

connect Verdict: satisfactory (684 P.)

CAR CONNECT CPO

Results CPOs Austria and Switzerland

		Austria						Switzerland	
Provider		**Ionity**	**Smatrics EnBW**	**Da emobil**	**Kelag**	**Ionity**	**GoFast**	**Move**	**Agrola**	**Socar**
Web		**ionity.eu/de**	**smatrics.com**	**www.da-emobil.com**	**www.kelag.at/energiewelt**	**ionity.eu/de**	**www.gofast.swiss**	**www.move.ch**	**www.agrola.ch/de**	**www.socarenergy.ch/de-ch**
Coverage										
Number of HPC charging points (min. 150 kW)*		72	164	25	22	54	102	81	28	14
Locations and Environment										
Signage / Lighting / Weather Protection		good / v. good / insuff.	insuff. / v. good / insuff.	auxr. / good / suff.	v. good / good / insuff.	v. good / good / insuff.	insuff. / good / good	satisf. / v. good / insuff.	satisf. / v. good / v. good	v. good / satisf. / insuff.
Toilets / restaurant, snack bar or vending machine / seating area		good / v. good / insuff.	good / v. good / insuff.	befr / satisf. / insuff.	good / v. good / suff.	v. good / v. good / insuff.	insuff. / satisf. / insuff..	good / v. good / insuff.	good / v. good / insuff.	v. good / satisf.. / v. good
Free Wi-Fi / service station / surveillance camera		insuff. / suff. / suff.	insuff. / insuff. / insuff.	insuff. / insuff. / suff.	insuff. / insuff. / insuff.	insuff. / insuff. / insuff.	insuff. / suff. / suff.	insuff. / insuff. / insuff.	insuff. / v. good / v. good	insuff. / insuff. / suff.
Charging Stations										
Usability / Placement / Display		v. good / v. good / v. good	v. good / v. good / v. good	good / v. good / v. good	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 / satisf.
Clear indication of charging performance / functionality / Info content		v. good / v. good / v. good	v. good / v. good / v. good	v. good / v. good / v. good	v. good / good / v. good	v. good / good / v. good	v. good / v. good / v. good	v. good / good / good	insuff. / v. good / v. good	good / v. good / v. good
Signposting of the car park / Parking space marking / Size / Cable management		mangelh / good / v. good / v. good	v. good / s. good / v. good / v. good	ausr / satisf. / v. good / v. good	v. good / s. good / v. good / v. good	suff. / v. good / v. good / v. good	v. good / v. good / v. good / v. good	v. good / v. good / v. good / good	v. good / v. good / v. good / satisf.	satisf. / v. good / suff. / satisf.
Service/Hotline										
Hotline number on charging station / costs		very good / very good	very good / very good	good / very good	satisf. / 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 / good	satisf. / v. good / good	satisf. / v. good / good	satisf. / v. good / v. good	v. good / v. good / good	good / v. good / satisf.	good / v. good / satisf.	satisf. / v. good / suff.	v. good / v. good / v. good
Payment										
Credit card: reader or QR code / additional payment methods		good / very good	good / insuff.	very good / good	good / good	good / very good	very good / very good	very good / insuff.	very good / very good	good / insuff.
Price transparency / Plug & Charge or Autocharge supported		v. good / ○ (Plug & Charge)	very good / ⊖	very good / ⊖	very good / ⊖	v. good / ○ (Plug & Charge)	very good / ⊖	very good / ⊖	very good / ⊖	very good / ⊖
Test Results										
Points Coverage	**(max.100)**	**25**	**100**	**25**	**25**	**50**	**100**	**75**	**25**	**25**
Points Locations/Environment	**(max.250)**	**172**	**140**	**95**	**112**	**170**	**119**	**152**	**155**	**132**
Points Charging stations	**(max.300)**	**278**	**280**	**271**	**243**	**271**	**278**	**246**	**255**	**264**
Points Service/Hotline	**(max.150)**	**140**	**134**	**125**	**123**	**135**	**131**	**121**	**90**	**138**
Points Payment/Price transp.	**(max.200)**	**175**	**125**	**143**	**135**	**175**	**145**	**130**	**165**	**125**
connect VERDICT	**max. 1000**	**790 good**	**779 good**	**659 satisfactory**	**638 sufficient**	**801 good**	**773 good**	**724 satisfactory**	**690 satisfactory**	**684 satisfactory**
		connect BEST IN TEST				connect BEST IN TEST				

* according to information from the CPOs and own research

Our test vehicle Polestar 2

Once again this year, Volvo's e-car subsidiary kindly let us have a Polestar 2 in the long-range version for our test drives.

■ It is still the ultimate version of the Polestar 2: the „Long Range Dual" model variant equipped with one electric motor per axle and a 78 kWh battery. It has a torque of 660 Nm and 300 kW (408 hp) system output. The vehicle accelerates from zero to one hundred in 4.7 seconds. The WLTP range is 487 km, the battery can be charged with up to 155 kW. The manufacturer specifies a duration of around 40 minutes for a charge from 10 to 80 percent SOC. This made the stylish, powerful electric car perfect for our test drives and charging stops. The Polestar 2 is available from 43,725 Euros, the „Longe Range Dual" version from 51,425 Euros.

Power for the long haul: The long-range version of the Polestar 2 with all-wheel drive primarily supported our test drivers on their Benelux tours.

BENELUX

Test route Benelux

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

■ The Benelux countries were divided between two test teams on separate routes: On one tour, the Polestar 2 (see page 93) drove through Luxembourg, the Netherlands and Belgium at the end of August. The Tesla Model Y (see page 95) completed the other tour after its test drives in North Rhine-Westphalia, making another detour through the Netherlands and Belgium.

In the Netherlands, our testers made charging stops at a total of 25 stations operated by Allego, Fastned, Ionity, Shell Recharge and Tesla. In Belgium, the test route led to 19 stations from Allego, Fastned, Ionity and Powerland. In Luxembourg, the testers focused on four locations of the provider Chargy. In these countries, too, the objective of our tour planning was to visit at least four stations per CPO. In total, the tours were about 1940 kilometres long, plus about 470 kilometres for arrivals and departures.

For identification at the charging stations, the testers used their German EMP apps and charging cards as well as ad-hoc payment options.

Belgium, Netherlands, Luxembourg
At the end of August and beginning of September 2022, the teams covered around 2410 kilometres in the Benelux countries..

Tesla

As a world premiere, Tesla has already opened its Supercharger in the Netherlands to other vehicle brands. We have tried it out, but do not give a grade.

CAR CONNECT CPO

▶ There was already speculation last year that Tesla wanted to open its Supercharger network consisting of charging stations up to 350 kW for other e-car brands. Since Tesla drivers are also increasingly charging at other CPOs and Tesla in Europe relies on the CCS charging plug commonly used here, this makes sense. The Netherlands was the first country to implement this – which suggested that we take a closer look at this functionality for our test planning.

However, it quickly became apparent that Tesla has tailored the charging experience closely to its own vehicles. Since the communication runs via the car's on-board display, the Superchargers do without further operating elements. This works fine for Tesla drivers, but drivers of other brands definitely need the Tesla app for status information and also for identification and billing. Conceptually, the Tesla locations are therefore not comparable with the charging stations of "normal" CPOs – so that a rating based on common criteria would be unfair. The observations of our testers can therefore be found out of competition in the table below. They include the observation that there is still room for improvement in aspects such as signage and weather protection, as well as in the comfort offerings of the charging parks.

Self-reliant: Tesla stations are different from others.

Chargy

Since last year, the number of HPC stations of the Luxembourg provider has grown. However, there is still room for improvement in terms of operation.

▶ Under the Chargy brand, the Luxembourg energy provider Eida currently offers a network of around 700 charging stations in its home country. In addition to using the company's own payment card mKaart, it is also possible to charge there ad-hoc or by roaming via EMPs from neighbouring countries. The "Superchargy" fast chargers pump between 150 and 300 kW into the electric car. According to the provider, there were already 33 of them at the time of our research – by the end of 2023, the provider wants to have installed 88 of them in the Grand Duchy. The test drivers visited four of these fast-charging stations on their tour.

The signage should be better, and the testers searched in vain for weather protection at all four locations. At least the surrounding street lamps provided lighting. Nearby restaurants or petrol stations are often suitable for toilet stops, at the Junglinster location also a public pay toilet.

German-speaking users first have to change the language at the charging station, which is a bit of a hassle. Also, it sometimes took several attempts to start charging – especially since a charging card is required in any case. Calls to the hotline only led to an actual contact in one of four cases tested.

Difficult start: "Superchargy" fast charger.

CPO

connect Verdict: satisfactory (682 P.)

Powerland

The history of the Belgian company leads to the use of many different types of charging stations – additionally, 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. The Powerland range in Belgium also included 13 HPC fast charging stations during the survey period, of which our test drivers visited four. As in the previous year, they repeatedly encountered different charging station types – so the testers and Powerland customers did not have the chance to get used to uniform operation.

The test locations lacked signage and weather protection; light was only provided by surrounding street lamps or neighbouring businesses. To visit a toilet, you have to ask nicely at a neighbouring car dealership.

Newer models of the different types of pillars can at least be switched to German or English and thus enable easy operation. The payment options do not pose any riddles either. At one location, however, the local charging station was out of order, and the Powerland testers' attempts to reach the hotline were unsuccessful in all cases.

Generational question: Younger stations also speak German.

CPO CAR CONNECT

connect Verdict: sufficient (518 P.)

Results CPOs Benelux

		Belgium				Luxembourg	Belgium			Netherlands		
Provider		**Fastned**	**Ionity**	**Allego**	**Powerland**	**Chargy**	**Fastned**	**Ionity**		**Allego**	**Shell Recharge**	**Tesla**
Web		**fastnedcharging.com/de**	**ionity.eu/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/mobilitaet/laden**	**www.tesla.com/de_de/supercharger**
Coverage												
Number of HPC charging points (min. 150 kW)*		64	48	22	13	33	520	39		137	224	568
Locations and Environment												
Signage / Lighting / Weather Protection		suff. / v. good / v. good	suff. / good / insuff.	insuff. / v. good / insuff.	insuff. / suff. / insuff.	suff. / good / insuff.	suff. / v. good / v. good	insuff. / satisf. / insuff..		insuff. / good / insuff.	suff. / v. good / suff.	insuff. / good / insuff.
Toilets / restaurant, snack bar or vending machine / seating area		insuff. / suff. / v. good	good / satisf. / suff.	satisf. / satisf. / insuff.	suff. / suff. / insuff.	satisf. / satisf. / suff.	v. good / v. good / suff.	v. good / v. good / insuff.		suff. / good / insuff.	good / good / insuff.	satisf. / good / insuff.
Free Wi-Fi / service station / surveillance camera		insuff. / suff. / good	insuff. / suff. / good	insuff. / insuff. / satisf.	insuff. / insuff. / insuff.	insuff. / insuff. / satisf.	insuff. / insuff. / satisf.	v. good / insuff. / satisf.		insuff. / insuff. / satisf.	insuff. / v. good / v. good	insuff. / insuff. / insuff.
Charging Stations												
Usability / Placement / Display		good / v. good / v. good	v. good / v. good / v. good	satisf. / v. good / v. good	good / good / good	good / good / suff.	v. good / v. good / v. good	v. good / v. good / v. good		good / v. good / good	v. good / satisf. / v. good	satisf. / good / insuff.
Clear indication of charging performance / functionality / Info content		v. good / v. good / v. good	v. good / good / v. good	v. good / v. good / v. good	v. good / suff. / v. good	v. good / v. good / v. good	v. good / v. good / v. good	good / v. good / v. good		v. good / v. good / v. good	v. good / v. good / v. good	insuff. / satisf. / insuff.
Signposting of the car park / Parking space marking / Size / Cable management		suff. / suff. / v. good / v. good	v. good / v. good / v. good / v. good	v. good / insuff. / satisf. / v. good	satisf. / satisf. / satisf. / v. good	satisf. / satisf. / v. good / good	satisf. / suff. / v. good / v. good	satisf. / v. good / v. good / v. good		suff. / suff. / v. good / v. good	v. good / v. good / v. good	good / insuff. / v. good / good
Service/Hotline												
Hotline number on charging station / costs		very good / very good	very good / very good	very good / very good	very good / satisf.	very good / very good	very good / very good	very good / very good		very good / very good	very good / very good	insuff. / very good
Multi lingual / Availability / Troubleshooting		v. good / v. good / v. good	v. good / v. good / v. good	good / v. good / satisf.	satisf. / satisf. / insuff.	good / good / suff.	v. good / v. good / v. good	good / v. good / good		good / v. good / satisf.	satisf. / v. good / good	satisf. / good / befr,
Payment												
Credit card: reader or QR code / additional payment methods		suff. / insuff.	very good / very good	good / very good	very good / very good	suff. / good.	very good / good	good / very good		very good / very good	very good / insuff.	insuff. / insuff.
Price transparency / Plug & Charge or Autocharge supported		v. good / ○ (Autocharge)	v. good / ○ (Plug & Charge)	very good / ⊖	satisf. / ⊖	v. good / ○ (Autocharge)	v. good / ○ (Autocharge)	v. good / ○ (Plug & Charge)		very good / ⊖	very good / ⊖	good / ⊖
Test Results												
Points Coverage	**(max.100)**	**100**	**75**	**25**	**25**	**100**	**75**	**25**		**25**	**25**	**–**
Points Locations/Environment	**(max.250)**	**160**	**147**	**103**	**45**	**136**	**196**	**144**		**106**	**130**	**–**
Points Charging stations	**(max.300)**	**266**	**265**	**267**	**233**	**249**	**268**	**285**		**268**	**265**	**–**
Points Service/Hotline	**(max.150)**	**144**	**140**	**121**	**60**	**97**	**139**	**126**		**126**	**130**	**–**
Points Payment/Price transp.	**(max.200)**	**135**	**175**	**125**	**155**	**100**	**160**	**175**		**175**	**150**	**–**
connect	**VERDICT max. 1000**	**805 good**	**802 good**	**641 sufficient**	**518 sufficient**	**682 satisfactory**	**838 good**	**755 good**		**700 satisfactory**	**700 satisfactory**	**without rating**

* according to information from the CPOs and own research

connect BEST IN TEST

connect BEST IN TEST

Our test vehicle Tesla Model Y

For their test drives, our teams had a Tesla Model Y in the maximum range version at their disposal – all-wheel drive and rich performance figures included.

■ Whether you want to call Tesla's Model Y an SUV because of its higher roof compared to the Model 3 is a matter of opinion. But in any case, the technical data of the maximum-range version used by our test team speak for themselves: all-wheel drive with dual engine, 378 kW (512 hp) of power, zero to one hundred in 5.0 seconds. Tesla is cagey about the torque – but this value should also be respectable. With a 79 kWh battery, the manufacturer states a WLTP range of 533 km. Our test teams used this endurance mainly on their trips through North Rhine-Westphalia, the Netherlands and Belgium. The base price is 61 315 Euros.

Up and away: Tesla's Model Y has a higher roof than the related Model 3. At Tesla Superchargers, it charges up to 241 km range in 15 minutes.

Methodology

At every charging stop the test drivers made on their several thousand kilometre tour, they examined and recorded the charging technology, comfort and billing.

■ Similar to mobile communications, there are network (or charge point) operators, in short CPOs. in the charging infrastructure – the actual operators of the charging stations – as well es service (or e-mobilty) providers, in short EMPs, who provide apps and billing platforms. Some providers such as EnBW, Smatrics or Move cover both roles and were therefore considered in both categories.

For the evaluation, the test teams made trips through Germany, Austria, Belgium, Switzerland, the Netherlands and Luxembourg (see route descriptions on the previous pages). Depending on the size of the country, they visited two to six stations 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 the charging process, the teams filled our comprehensive protocols on the conditions on site, the course of the charging process and any errors that occurred. They also contacted the providers' hotlines to test the quality of their service. As in all our network tests, however, the charging rates themselves are not the subject of the evaluation.

As usual, we have further developed our rating key this year. On the one hand, we have adapted to some realities in the market – a vending machine now gets points just as much as a restaurant. On the other hand, we have raised our expectations for the charging experience a bit – points are now also awarded for seating (even without consumption) or for a better feeling of security through camera surveillance, for example. You can find a more detailed description of our methodology at **www.connect.de/ladenetztest** or with the QR code.

The overall impression counts: Our evaluation includes signage and marking of the charging parking spaces, but also comfort and safety aspects such as lighting and camera surveillance.

Scan the QR code for an even more detailed description of our methodology (in German).

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

Our test vehicle VW ID.4

For the first time, Volkswagen also kindly supported our charging test with a test vehicle. They provided us with the brand new ID.4.

■ In the "Pro Performance" version made available to us, the VW ID.4 has a net battery capacity of 77 kWh, giving it a WLTP range of 537 km. When charging, it swallows electricity at up to 135 kW. This means it takes around 29 minutes to bring the state of charge from 5 to 80 percent. The driving performance is 150 kW (204 hp) with a torque of 310 Nm – the rear-wheel drive electric VW accelerates from zero to one hundred in 8.5 seconds. The ID.4 drove on the Hamburg-Munich route and in Austria in our charging test. In the "Pro Performance" version used for this, the price list starts at 46 335 Euros.

E-professional: According to the manufacturer, the VW ID.4 Pro Performance recharges 100 kilometres of range in about 7 minutes.

Conclusion

Hannes Rügheimer, connect author

An important factor in ensuring that e-car newcomers do not immediately regret their choice of engine system is the charging experience. It starts with not driving to a fully occupied station or a defective charging station, of course includes a problem-free charging and payment process, and requires a minimum of comfort when charging. The advanced methodology of our charging network test takes these requirements into account.

In Germany, EnBW fulfils these stricter criteria best – for the fourth time in its role as EMP and, as in the previous year, also as a CPO.

Among the EMPs, Smatrics in Austria and Swisscharge in Switzerland are ahead. Both Alpine countries are Ionity's domain in this year's CPO ranking. In Belgium and the Netherlands, Ionity also takes second place after the local hero Fastned.

In Germany, newcomer Aral Pulse celebrates an impressive start with a second place in the CPO ranking, relegating its strong competitor Ionity to third place.

In Luxembourg, the local provider Chargy is our only candidate. It achieves the grade "satisfactory" there – but clearly improves on its previous year's result.

Despite all the differences in terms of coverage, convenience and service at the location, hotlines and payment options, one pleasing insight of our test is that the actual charging process is uncomplicated for almost all candidates. However, if faults occur, quicker remedial action would often be desirable – and some providers should invest a lot more in the "extras" of the charging process.