

Seamless Payment at Charging Stations: Digitalization in Electric Mobility

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wirecard

Electric Mobility Payment Solutions

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1. Electric mobility: the industry today

Slowly but surely, electric mobility is gaining momentum, at least in some countries: 84% of all electric vehicles and plug-in hybrids are being driven on the roads in the United States, China, Japan, the Netherlands, Norway, and Germany (as of 2016)¹.

China is by far the global leader. In 2017, over 600,000 new electric cars were registered there which amounts to almost half of all the electric cars worldwide². Europe's pioneer on the e-mobility front is Norway. Here, nearly 50% of newly registered cars are battery-powered, a market share where Norway is leading the way globally.

According to experts, various factors are decisive for the acceptance and hence the success of e-mobility (see box). As well as costs, subsidies, and the necessary infrastructure, these include supposedly small things, such as making the process of charging simpler and more practical. This is where digitalization must come into its own, so this sustainable and future-proof form of mobility can prosper.

With electric cars, you can't just drive to the next filling station, refuel, pay by your preferred method of payment, and drive away again, like you can with conventional combustion-powered vehicles. If you're on the road with your electric car, you need an array of "charging cards" with

Factors for the acceptance of e-mobility



Price



Range



Infrastructure



Charging time



Payment

which you can start the charging process at the charging points. You also need to register and figure out the different billing methods either according to power consumption or time. But thanks to digitalized services recharging ceases to be a nuisance and is now becoming an altogether easier and more pleasant experience.

¹ International Energy Agency: "Global EV Outlook 2016. Beyond one million electric cars." Beyond one million electric cars." https://www.iea.org/publications/freepublications/publication/Global_EV_Outlook_2016.pdf
² McKinsey & Company: "Electric Vehicle Index." 2018.



2. Confusion for drivers: payment systems at public charging stations

Careful preparation is crucial for anyone undertaking a longer journey by electric car. Instead of customer-friendly charging options, the market today is still dominated by a confusing myriad of providers with different payment and charging systems. In cities, the options are complicated enough, but they become even more bewildering from region to region and especially from country to country. Germany is a good example of provider chaos: There are approximately 11,000 charging stations (as of June 2017). Payment is possible with an RFID card at 6,200 of

them, and this requires prior registration. In comparison, payment can only be made by smartphone app at half that number, i.e. 3,300 charging points³. In July 2017, a charging station survey by the utility company Lichtblick ascertained that eight out of 11 charging point operators didn't allow ad-hoc charging, in other words, spontaneous charging without prior registration at all.⁴ Cross-provider and flexible solutions without contractual obligations are only slowly becoming established.

3. Seamless payment: benefits for both parties

As in other industries, it's important for the e-mobility sector to offer users simple and secure payment methods, either with or without prior registration or a contract linked to the EV (electric vehicle) driver's home power tariff. There are various possibilities for seamless, ad-hoc payment at public charging points, including:

- Scanning a QR code using a smartphone and being directed to a payment option such as credit card, PayPal, etc.
- Paying by app with various payment options
- Contactless payment by smartphone or credit/debit card

This not only ensures customer satisfaction, but also brings benefits for the charging point operators that shouldn't be underestimated:

3.1 Secure, convenient, and simple payment for users

Up until now drivers of electric cars see charging their vehicles as a necessary evil. It takes time, isn't as well-established as having to refuel a traditional combustion-engine car at a filling station, and finding and using a charging station is sometimes a challenge. Let's look at the situation in Germany again. There are currently over 70 companies that issue charging cards for drivers of electric cars, whereas, for drivers of conventional cars, a single card – that is, a debit or credit card – is completely sufficient⁵. The need for compatible plugs and cables and having to wait for rechar-

³ BDEW Bundesverband der Energie- und Wasserwirtschaft e.V., Erhebung Ladeinfrastruktur, 2017.

⁴ c't: "Ladehemmung. Der steinige Weg zur Elektro-Tankstelle," 2018.

⁵ <https://www.heise.de/ct/ausgabe/2018-9-Der-steinige-Weg-zur-Elektro-Tankstelle-4013427.html>
Projekt SLAM: "Übersicht Marktentwicklung und Bedarf zu eRoaming und Ad-hoc-Laden.

Infobroschüre Zugangs- und Abrechnungssysteme," 2017. <http://www.slam-projekt.de/downloads/ap4-adhoc-laden.pdf>

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“As few obstacles as possible should stand between electric vehicle drivers and the charging of their cars. Drivers must be able to pay everywhere, at every charging station, with minimal effort and without the need to register,” says Jan Rübeler, Head of Sales, Sales Travel & Transport, Wirecard

ging spots to become available are further frustrations that don't make e-mobility any more attractive and convenient, thus discouraging the adoption of electric vehicles.

It's important to remove these obstacles and make electric mobility even more attractive for consumers. Technical innovation improves the situation greatly, for example, with superfast charging stations being able to fully re-charge cars for long-distance travel within around 30 minutes.

In addition to the technical aspects, digitalization – particularly of the payment processes plays a decisive role. Stand-alone solutions from individual providers with different chip cards and authentication methods confuse and deter users. Instead, simple solutions are essential to enable drivers to pay to charge their vehicles quickly, securely, and with minimum effort. For instance, EV drivers could use a provider app to find the shortest route to the next vacant charging spot or show the battery level during charging. Similarly, users could view the current tariff, the payment amount and simply pay with a digital wallet such as PayPal or with a contactless debit or credit card at the charging station.

Special services can turn the hassle of recharging into a more enjoyable experience. Through the digitalization of

payment methods, charging point operators gain precise insights into the users' charging habits: They can offer loyalty programs and therefore tailor their offerings individually to each user. Various scenarios are conceivable and implementable thanks to digitalization. They include loyalty points schemes, but also discounts and lower prices for the current or next recharge are services which offer genuine added value for customers.

Many more scenarios can be developed with innovative app solutions. As recharging usually takes a while, drivers will probably spend this time somewhere near the charging point. Information about a driver's whereabouts can be used to give him or her a voucher for a nearby café or an invitation to pick up a freshly brewed coffee via an app. Examples such as these show that value-added services like loyalty programs or vouchers contribute to a positive customer experience and long-term customer loyalty.

3.2 Providers profit from a bigger target group and more services

Even more so than for operators of filling stations, it's important for charging point operators that the payment systems offered are reasonably priced. The reason is simple:

“While refueling a combustion-engine car at the pump rarely takes more than a minute and the amount is usually over €20, the time/amount ratio is far less favorable at charging stations: For example, depending on the battery charge level, it takes between one and two hours to recharge a car at an 11 kW charging outlet, and the customer pays between €5 and €10.”⁶ Therefore it’s even more important to keep costs low and utilization high.

Charging point operators can tap into new customer segments thanks to digital and ad-hoc payment options by app or mobile website or by connecting to charging station networks (e-roaming). They can enlarge their customer base by including EV drivers with all cards and contracts. What’s more, this freedom increases customer satisfaction. According to studies, EV drivers and prospective EV drivers prefer ad-hoc payment methods, such as credit or debit card or PayPal. Contracts with charging point operators or platform providers are proving less popular. There’s still a wide gap between the ideal and current situation, particularly concerning the payment methods available, simple authentication and reliable roaming.⁷

The more convenient and secure the payment options are that EV drivers can choose from, the greater the chance that an operator will increase utilization and survive and thrive on the market. Drivers can be given the opportunity to recharge their car battery in a reliable and customer-friendly way using their preferred payment method, without the need to be authenticated by an RFID card, chip or a suitable app. This is just as relevant for charging point operators such as utility companies, automobile manufacturers, and other suppliers as for e-roaming platforms and other mobility service providers. What’s crucial is that the various payment service options slot perfectly into the provider’s portfolio and can be easily integrated into existing systems.

A transparent tariff system that’s as easy for users to understand as the prices displayed at the gas pump, plus reliable maps with real-time data, are further prerequisites to fully exploit the potential that exists in the EV industry thanks to digitalization.

4. Learnings

- ☑ Electric mobility is gaining momentum. Nevertheless, it’s still being slowed down by a number of factors.
- ☑ Currently, experts are still observing too much of a chicken-and-egg situation: There is not enough infrastructure, resulting in a consumer reluctance to buy electric cars. However as not many electric cars are being purchased, there’s a lack of willingness to expand the infrastructure.
- ☑ It’s therefore important to create an infrastructure in which the parties involved – automobile manufacturers, charging point operators, and users – work together.
- ☑ Among other things, this means creating uncomplicated and secure user experiences for EV drivers at the charging stations and reducing the current number of non-transparent standalone solutions.
- ☑ Recharging electric vehicles is increasingly becoming part of everyday life: recharge where you park. Whether it’s at public charging stations, supermarkets, or parking garages, infrastructure must be created that meet the needs of the industry.
- ☑ Thanks to digitalization, the customer’s desire for convenient and secure refuelling and payment can be met and, with additional services such as discounts for loyal customers, the customer experience can be enhanced even further.

5. Wirecard as the interface between providers and users

Electric cars are refueled quite differently to combustion-engine cars – not only in terms of the charging process itself. While the only parties involved at conventional filling stations are usually the driver and the filling station operator, e-mobility scenarios are different. Many more parties are involved: the EV driver, the charging point operator (CPO, for example, a utility company) and the mobility service provider (MSP), which uses authentication to manage settlement between the customer and the CPO.

⁶ VDE Verband der Elektrotechnik Elektronik Informationstechnik: “Ad-hoc-Laden und spontanes Bezahlen. Wie sich ‘punktuelleres Aufladen’ umsetzen lässt.” 2017. https://www.digitale-technologien.de/DT/Redaktion/DE/Downloads/Publikation/IKT-EM/ikt3-OVAL%20Studie.pdf?__blob=publicationFile&v=3

⁷ Schaufenster Elektromobilität: “Bedarfsorientierte Ladeinfrastruktur aus Kundensicht.” 2017. http://schaufenster-elektromobilitaet.org/media/media/documents/dokumente_der_begleit_und_wirkungsforschung/EP35_Studie_LIS_online.pdf

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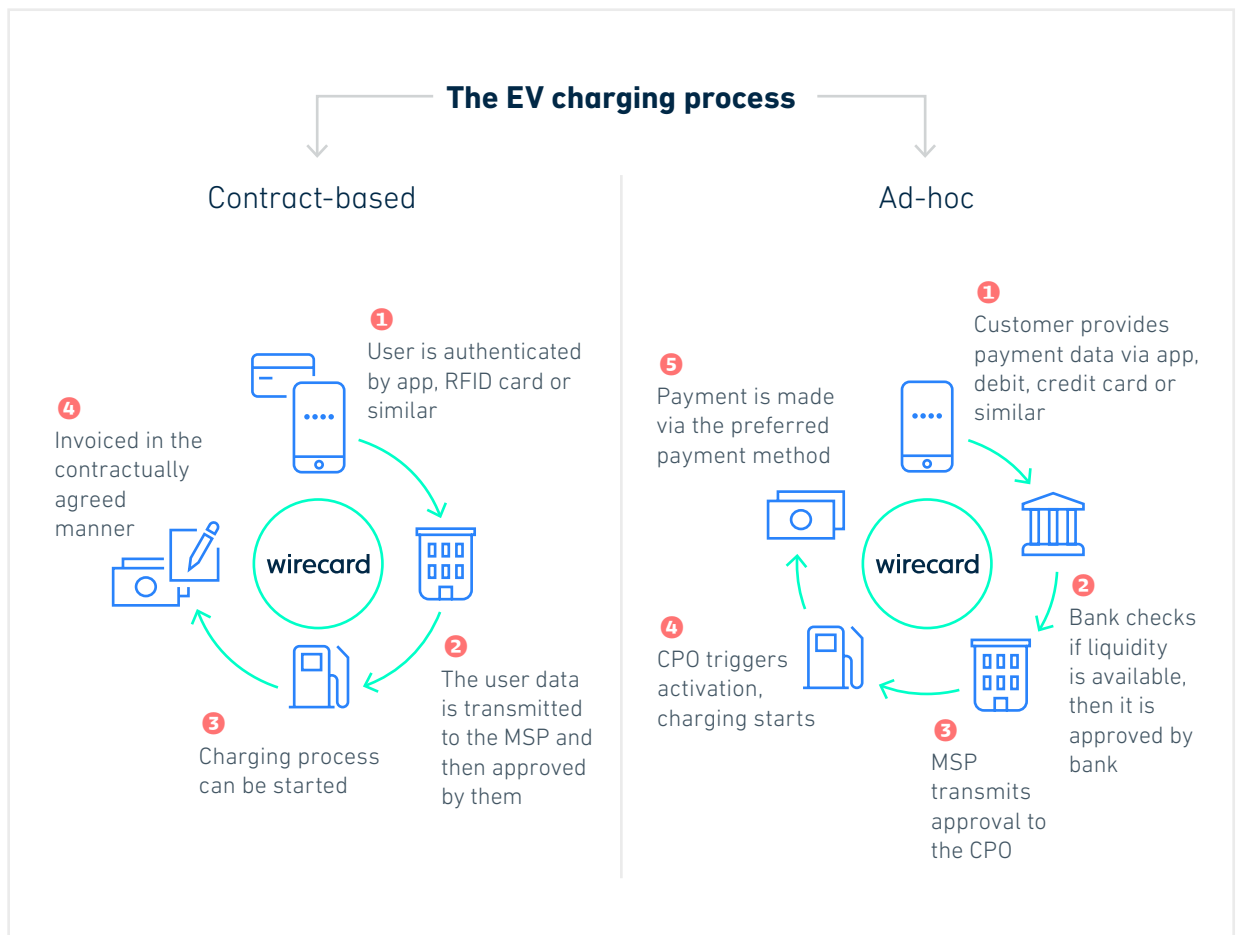
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Additionally, an e-roaming platform may be another agent in the refueling process. Perfectly dovetailed processes between all these parties are necessary to enable customers to recharge their vehicles.

As a leading international innovator in the field of digital financial technology, Wirecard is close to this network and always has its finger on the pulse of developments. Through its many and flexible payment solutions, various payment methods can be easily integrated into existing systems.

“The strength of Wirecard lies in how it combines cashless payment solutions to charge electric vehicles with value added services – and does so securely and conveniently for everyone involved,” says Vincent Frontzek, Partner Manager Travel & Mobility, Wirecard



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About Wirecard

Wirecard AG is a global technology group that supports companies in accepting electronic payments from all sales channels. As a leading independent supplier, the Wirecard Group offers outsourcing and white label solutions for electronic payments. A global platform bundles international payment acceptance and methods with supplementary fraud prevention solutions. With regard to the issuing of own payment instruments in the form of cards or mobile payment solutions, the Wirecard Group provides companies with an end-to-end infrastructure, including the requisite licences for card and account products.

Wirecard (GER:WDI) is one of the world's fastest growing digital platforms in the area of financial commerce. We provide both corporate clients and consumers with a constantly expanding ecosystem of real-time value-

added services built around innovative digital payments by using an integrated B2B2C approach. This ecosystem concentrates on solutions in the areas payment and risk, retail and transaction banking, loyalty and coupon programs in addition to data analytics and conversion rate enhancement across all sales channels (online, mobile, ePOS). Wirecard operates regulated financial institutions in several key markets, in addition to holding issuing and acquiring licenses from all major payment and card networks. Wirecard AG is listed on the Frankfurt Stock Exchange (DAX, TecDAX, ISIN DE0007472060). Visit us on www.wirecard.com, follow us on Twitter @wirecard and on Facebook @wirecardgroup.

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