



AVILOO MAGAZIN | REMARKETING - 2024

A background image showing the front of several cars in a showroom. A red car is in the foreground, followed by a yellow one, and a blue one further back. The cars are slightly out of focus, with bright bokeh lights from the showroom ceiling in the background.

**REACH YOUR GOALS
FASTER WITH A
BATTERY TEST!**

Comprehensive AVILOO
remarketing analysis
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**SOH - NEW MEASURE-
MENT PARAMETER**

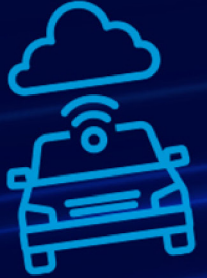
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ON THE ROAD**

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AVILOO study
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AND SPECIFIC**

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automechanika
FRANKFURT

10. – 14. 9. 2024
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Hall / Halle 9.0





Dr. Marcus Berger,
AVILOO CEO

IMPRINT

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EDITORIAL

Dear reader,

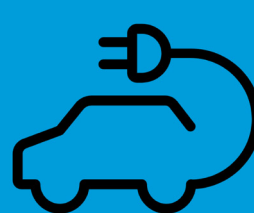
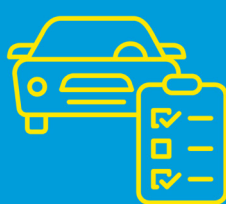
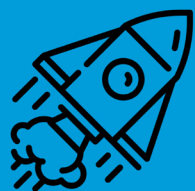
We are the market leader in battery diagnostics for electric cars and plug-in hybrids, and see ourselves as partners of our customers. Our in-depth understanding of their needs allows us to continuously enhance our range of solutions in a targeted manner.

This first issue of our magazine provides insights into the results of our remarketing study and serves as a guide to battery testing, EV usage behavior and maintenance, as well as potential cost savings.

When it comes to remarketing electric cars, companies and their customers face a challenge. The condition of the electric vehicle, especially of the battery, is crucial for determining the price and ensuring customer satisfaction. Efficient fleet management requires careful planning. Fleet managers must create an optimal charging infrastructure for electric vehicle use to enhance performance and save time. Achieving these goals requires in-depth knowledge, which can only be gained through extensive analysis. Vehicle batteries need to be regularly and thoroughly analyzed to enable sustainable maintenance.

Battery diagnoses for vehicles can quickly seem confusing due to the variety of manufacturers, battery types, and complex applications. This is where AVILOO battery diagnoses come in, offering greater transparency in buying and selling, along with a user-friendly, standardized and fully integrated application.

AVILOO offers two different tests that can be tailored to individual needs. Greater transparency in the sales process and improved service quality strengthen customer confidence and the remarketer's reputation. Not only do their customers benefit from this service, but as a business owner, they can also make strategic decisions more easily by relying on the analyses provided by our engineering team.



e-car remarketers' sales opportunities increase by

36 %

when they market used cars equipped with a battery test certificate – in comparison to not offering it.

Customers are willing to pay at least

€ 550 – 1,100

more for used e-cars and hybrid plug-in vehicles, equipped with an independent battery report or certificate.

Many potential e-car buyers would only consider to buy a new vehicle – however

57 %

of them would consider buying a used e-car, when it comes with an independent battery report or certificate.

75 %

of used e-car buyers expect an independent battery report.

81 %

of used car buyers consider car dealers offering an independent battery report to be particularly trustworthy.

AVILOO REMARKETING STUDY

REACH YOUR GOALS FASTER WITH A BATTERY TEST!

Used E-Cars and Plug-In Hybrids: What Makes the Customers Tick

OUR EAR TO THE MARKET

As many know, we are strong advocates of transparency. This commitment drives us not only to analyze our test result databases from multiple perspectives, but also to continually conduct international field research and market surveys on used e-cars and plug-in hybrids.

In mid-2024, we conducted an online survey with 913 end customers and potential buyers across Europe. Together with Splendid Research Hamburg, we transformed the findings into our AVILOO Remarketing Study*. The full presentation of the study will be available soon, in any case, we would like to share some highlights already here. You will be surprised.

- Sales opportunities in e-car remarketing increase by 36% when used cars are equipped with a battery test certificate, compared to when it is not provided.

- A large number of potential e-vehicle buyers typically prefer to buy new vehicles. However, 57% of them would also consider purchasing a used one if its battery condition was certified and documented by an independent test.

A test certificate from a neutral party - such as AVILOO - is already at the top of customers' wish lists. Our representative study shows that 75% of buyers of used e-models expect to receive a certificate or report on the battery's SoH (State of Health).

Among 81% of buyers, dealers of used EVs who offer an SoH certificate enjoy a particularly trustworthy image.

When buying a used EV, customers are willing to pay a higher price if a battery certificate is provided (between € 550 and € 1,100).

* n=913, survey period: 06-07/2024, online study in Germany, Austria, Belgium, France, United Kingdom, Norway and Sweden - Van Westendorp method.

THE FLASH TEST REPORT PREVIEW: MORE THAN JUST A LOOK AHEAD

The increasing demand of used e-car buyers for an independent certificate on the condition of the traction battery reflects the change in consumer priorities. According to a recent DAT study, to an impressive 73% of potential buyers a battery certificate is just as important or even more important than the mileage.

To meet this need and further promote the used electric car market, AVILOO has developed a special feature for business customers that enables VIN-based, fully automated integration of battery certificates into online platforms. The FLASH Test Report PREVIEW was created specifically as additional image for the online display.

The various advantages of this feature are:

- Comprehensive information at a glance: The FLASH Test Report PREVIEW gives prospective buyers all the relevant details at a glance, with further explanations available via the integrated QR code.
- Acceleration of the sales process: The report minimizes buyers' risks and accelerates the sales process.
- Increase in sales revenue: The FLASH Test Report PREVIEW offers clear added value that can have a positive impact on sales revenues.
- Positioning as an expert for electric cars: By using AVILOO technology, vehicle dealers position themselves as EV-experts.

A practical example of the efficient use of independent battery tests is the cooperation between AVILOO, Hyundai and mobile.de. Together they rely on the effective AVILOO FLASH Test Report to emphasize the qualities of their used electric cars. The AVILOO FLASH Test PREVIEW Reports are displayed in mobile.de's online ads.

LEARN MORE ON THE
TOPIC - CLICK HERE OR
SCAN THE QR CODE



FLASH TEST REPORT PREVIEW

AVILOO SCORE

99
/ 100

MARKE: Hyundai
MODELL: Kona - 64 kWh
KM-STAND: 62.392 km
DURCHGEFÜHRT VON:
AVILOO Preview



Verwendung und Historie der Hochvoltbatterie

Analyse des Lade- und Fahrverhaltens

69 / 70

Leistungsfähigkeit der Hochvoltbatterie

Analyse der Zellspannungen und Modultemperaturen.

30 / 30

Hochspannungsbatterie-Steuergerät

Überprüfung der Signale und Berechnungen des Batteriesteuergeräts.

✓

Fahrzeugkommunikationsschnittstelle

Überprüfung der Kommunikation über die Diagnoseschnittstelle.

✓

Gesundheitszustand SoH

aus dem herstellereigenen Batteriemanagementsystem ausgelesen

98,2 %



Frage den Verkäufer nach dem original FLASH
Test Report – Infos über aviloo.com/ft-preview
oder diesen QR-code



<Hier könnte
dein Logo sein>

FLASH TEST REPORT PREVIEW

GOOD TO KNOW

Customers are willing to pay a higher price if they are provided with a battery certificate as part of their purchase. The accepted surcharge ranges from € 550 to € 1,100, at least.

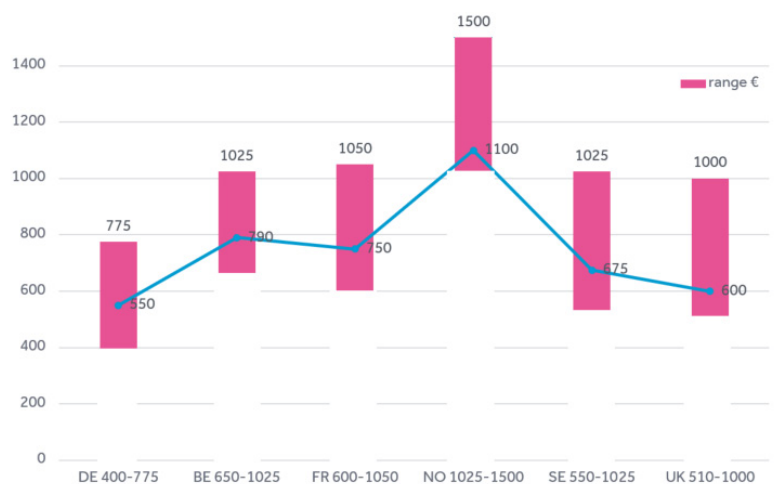


DIAGRAM 1
ADDITIONAL COSTS' ACCEPTANCE (MINIMUM) PER COUNTRY UPON
PRESENTATION OF A CERTIFICATE

SOH - A NEW MEASUREMENT PARAMETER IN REMARKETING

Although there is often talk of quantum leaps in electric vehicle battery technology, progress has been relatively modest. It should first be acknowledged that range is not the sole factor in evaluating an electric vehicle. Instead, the key lies in the quality of the batteries - measured and shown in percentage values. In this interview, AVILOO CTO Nikolaus Mayerhofer explains which innovations we can expect in the near future.

HOW DOES A BATTERY WORK?

N. Mayerhofer: To assess the health of a battery, you first need to understand how it works. The key performance parameters are its nominal voltage in volts [V], its capacity in ampere-hours [Ah], and the total amount of energy that can be drawn, measured in kilowatt-hours [kWh]. These parameters are influenced by factors such as the duration of usage, environmental conditions (e.g., temperature), and discharge characteristics (driving profile), among others.

WHAT DOES SOH MEAN?

N. Mayerhofer: SoH stands for State of Health and provides information about the condition of an electric vehicle's battery. Various methods have been developed to determine this state, but there is no standardized approach in the electric mobility sector. For example, SoH can be estimated based on the vehicle's range. Theoretically, the current range could be compared to the range when the battery was new, with the result expressed as a percentage. This assumes the same driving style as a baseline. In reality, however, it varies individually and is influenced by external conditions.

WHICH METHOD IS BEST?

N. Mayerhofer: Probably the most transparent and least affected by external influences method for determining the SoH value

is based on the WLTP driving cycle—the 'Worldwide Harmonised Light-Duty Vehicles Test Procedure.'

This method aims to record a standardized driving profile under consistent conditions, offering the advantage of being uniform worldwide and thus easily comparable. It is also independent of the drivers and their driving style.

However, there is a drawback to this procedure: while the WLTP range when new can be obtained from the manufacturer's data sheet, determining the current WLTP range would require driving the vehicle according to the WLTP standard, which involves significant cost and effort.



NIKOLAUS MAYERHOFER, AVILOO CTO, WITH THE AVILOO BOX

„Mileage and range
are not the most
crucial factors for
an electric vehicle's value.
What truly matters is
the current state of
its battery.“



NIKOLAUS MAYERHOFER, AVILOO CTO

Measuring during the charging process is also not an option, as the amount of energy to be charged is influenced by external factors such as the charging speed. Additionally, the amount of energy required to charge the battery is always greater than the amount of energy that can actually be drawn from it.

THAT'S HOW AVILOO DOES IT

N. Mayerhofer: With the AVILOO battery test, the State of Health (SoH) is calculated based on the available energy in kWh, incorporating both external and internal influencing factors.

The AVILOO PREMIUM Test is conducted as follows: Connect the AVILOO box to the vehicle's OBD interface and drive in your usual driving style until the battery discharges from 100% to 10%. During the drive, data is collected and transmitted in real time to the AVILOO Battery Data Platform. The data is then validated, and the battery's State of Health (SoH) is analyzed and calculated.

Taking temperature and driving style into account makes this approach significant and comparable. Each measurement result is adjusted for a battery temperature of 25 degrees Celsius. To ensure consistency with the discharge rate, each result is also adjusted to reflect a discharge rate corresponding to the WLTP.



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MAIN TOPIC

SAVING ELECTRICITY ON THE ROAD

Driving behavior plays a key role in the aging of electric vehicle batteries, as evidenced by AVILOO's latest comprehensive study. The driving habits of operators are crucial for the proper maintenance of the fleet. The better the condition of the vehicles, the safer the journeys, the more secure the passengers, and the higher the potential sales price.

DIVERSE DRIVING STYLES - CLEAR DIFFERENCES

Different driving styles have a significant impact on the battery. Depending on the type of driving behavior, two extremes can be distinguished:

- 1. Moderate driving behaviour: Characterized by economical, anticipatory driving, thorough battery care, low charging cycles (e.g. pre-conditioning at the socket), mostly urban trips with little highway use, and economical use of air conditioning and heating.
- 2. „Lead foot“ driving: This driving behaviour is characterized by nervous driving, primarily on the highway or in hilly terrain. It includes frequent recuperation, intensive preheating, and preconditioning (especially without being plugged in), as well as intensive heating and air conditioning.

On average, economical drivers consume 16-18 kWh/100 km, while those with a ‚lead foot‘ consume almost twice as much.

All other cases analyzed in the study fall between these two categories and are not characterized by extreme values. In larger vehicles, driving behavior has the same effect, though overall consumption is higher. Diagram 1 also illustrates another vehicle type with a different architecture (larger, heavier, and less efficient propulsion system), where the average consumption even exceeds that of the first vehicle by approximately 9 kWh/100 km.

Moderate driving behavior is therefore not only good for the wallet but also helps protect the electric vehicle's battery, ensuring longer and more carefree use.

THE MYTH OF RECUPERATION

Even frequent recuperation, or the recovery of braking energy while driving, results in an increased number of charging cycles, which accelerates battery aging.

THE NUMBERS DON'T LIE

Consumption can be reduced by 10% with simple adjustments to driving behavior. This not only results in significant energy savings over the life of the car but also makes 100,000 kilometers in one vehicle comparable to 110,000 kilometers in another.

Paying attention to your driving style is therefore well worth it. For example, a vehicle with 600,000 km on the odometer had a lifetime consumption of 30.8 kWh/100 km, whereas a comparable vehicle had only 27.8 kWh/100 km. Excessive preconditioning—preheating or pre-cooling the battery to optimize the temperature for charging—also significantly increases energy consumption.

For this reason, regular tests are advantageous to maintain an accurate overview of the battery's condition at all times.

IS PRECONDITIONING REALLY SO IMPORTANT?

Some vehicles allow users to 'precondition' the car before starting their journey. This process often occurs automatically and brings both the passenger compartment and the battery to a certain temperature. The main purpose of preconditioning the battery is to reduce its internal resistance, making it more efficient and allowing for faster charging. This also affects short-term charging during braking (recuperation). However, heating a battery, which weighs several hundred kilograms, consumes a significant amount of energy.

In Diagram 2, we compare the energy consumption for preconditioning between vehicles that only heat the passenger cabin and those that also heat the battery (usually to around 20°C). A significant difference in energy consumption can be observed. This should prompt the user to carefully consider whether the drive is long enough or if charging should follow afterwards, so that the benefits outweigh the drawbacks.

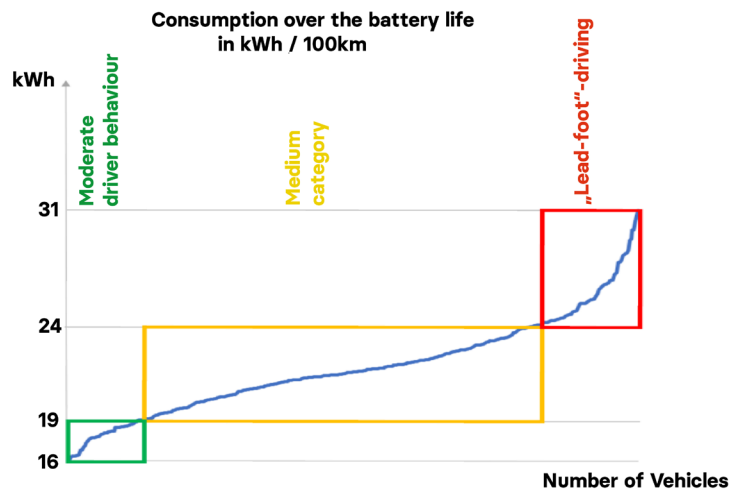


DIAGRAM 1
Increase in energy consumption depending on driving style

GOOD TO KNOW

- Always precondition the vehicle while the charging cable is connected. This can save up to 20-30% of charging cycles, especially when traveling short distances.
- Predictive driving helps reduce charging cycles and can lead to savings of up to 5%.

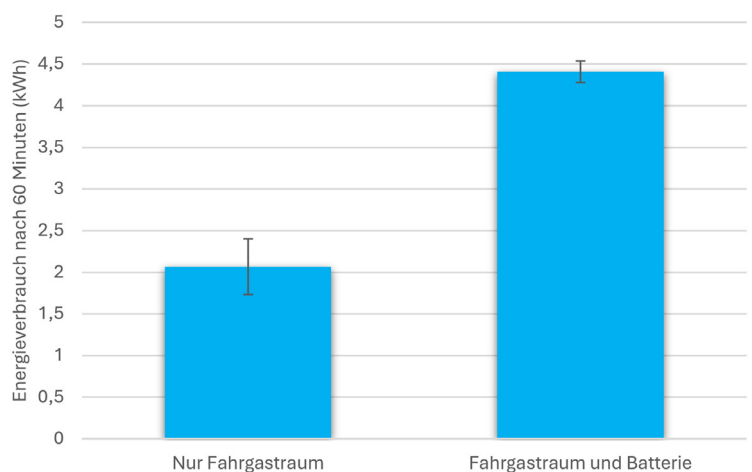


DIAGRAM 2
Increase in energy consumption depending on driving style



SUNNY RANGE AND WINTER WARMTH: CREATIVE EV-TRICKS



Tip 1 Moderate Driving Style

A calm driving style - avoiding rapid acceleration and braking - is beneficial not only for preventing accidents on icy roads but also for conserving the battery of your electric vehicle. Additionally, using Eco mode, which is integrated in many electric cars, helps save energy.



Tip 2 Correct Charging

To protect your battery in cold weather, it is recommended to avoid fully charging or completely draining the vehicle. The optimal charge range is between 20% and 80%. If the vehicle is parked for extended periods, it is best to maintain a charge level around 50%.

Frequent rapid charging also puts a high load on the battery and should be avoided, especially in winter.



Tip 3 Regular Battery Tests

AVILOO recommends conducting regular battery tests to assess vehicle usage and detect potential damage early. These tests help identify performance deviations that may signal underlying issues. This is particularly important in winter, as battery performance can affect vehicle behavior and pose risks to the driver.

Start the new season safely and comfortably!

Falling temperatures pose certain challenges for electric cars. Similar to mobile phone batteries, the batteries in electric vehicles lose their energy more quickly in cold conditions. This is because the chemical processes within the battery slow down at low temperatures, causing a drop in voltage. In other words, the battery becomes less efficient.



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Tip 4 **Protection from Environmental Influences**

Both people and electric cars perform best at an ambient temperature of around 20 degrees Celsius. Extreme cold and heat can lead to battery issues in your vehicle. To prevent this, it is advisable to park your electric car in a garage, multi-story car park, or at least in a car-port sheltered from the wind during icy temperatures. Additionally, it is important to switch to winter tires when temperatures drop below 7 degrees Celsius. Due to the higher weight of electric cars, they exert more pressure on the tires, so this should be considered when selecting tires.



Tip 5 **Preconditioning**

Preconditioning refers to warming up or cooling down the battery in preparation for the charging process. It helps prevent battery defects and premature aging, especially in low temperatures. To minimize charging cycles, it is advisable to connect the vehicle to the mains during preconditioning, as this reduces the need to draw power from the battery. Preconditioning is particularly important for fast charging. Modern electric vehicles now feature an automatic preconditioning function that activates when approaching the next charging station. This not only protects the battery but also speeds up the charging process.



Tip 6 **Efficient Heating**

Heating consumes the most energy in an electric car, and there are significant differences depending on the heating system used. For example, an electric resistance heater consumes more energy than a heat pump. To save electricity without freezing, you can turn on the heating 30 minutes before departure. The vehicle should remain connected to the power supply to save additional charging cycles and energy. Short trips can also be made more comfortable by using the steering wheel and seat heaters.

GLOSSARY

E-MOBILITY FROM A TO Z

STATE OF HEALTH (SOH)

The State of Health (SoH) refers to the current condition of a lithium cell, which is affected by various aging processes that lead to reduced performance and storage capacity. The SoH provides information about the battery's current quality and functionality. This condition can be assessed using various parameters, including the storage capacity, storable energy, and internal resistance. Therefore, the SoH is a crucial indicator for evaluating the long-term performance and service life of a battery.

EQUIVALENT FULL CYCLES

The total number of charge and discharge cycles a cell has undergone is calculated based on the total energy transferred through it. A full cycle represents a complete charge from 0% to 100%, followed by a complete discharge. To determine equivalent full cycles, the total energy transferred through the cell is divided by its energy storage capacity. For example, a vehicle with a 70 kWh battery, having traveled 100,000 kilometers and consumed a total of 21,000 kWh, would result in 300 equivalent full cycles. Under optimal conditions, batteries can achieve well over 1,000 equivalent full cycles in real-world operation.

BATTERY DEFECT

A battery defect encompasses all problems that can occur in a traction battery. These issues range from cell defects, leaks, and insulation problems to wiring faults and defects in control units. Cell defects may arise from manufacturing faults or during operation and can lead to reduced range, vehicle malfunction, or, in the worst case, a fire. Leaks and insulation problems typically result from mechanical defects. Defects in control units can also cause reduced range or, in severe cases, unsafe battery operation.

KNOW-HOW: THE ENGINE FOR DEVELOPMENT AND PROGRESS!

Follow the AVILOO Tech Show & Remarketing Show on YouTube for fresh inspiration and insightful information!



Discover the AVILOO white papers and case studies and select the combination that best suits your needs!



connect to detect.



CHECKLIST

Checklist for electric fleet operators

1.	MILEAGE / PERFORMANCE: What mileage can be expected based on battery size (large vs. standard)? Does the leasing period align with the mileage in relation to the mileage-based battery warranty?	✓
2.	RANGE: What range is needed for the journey without intermediate charging? Is intermediate charging an option? Will the range remain sufficient in a few years if the SoH continues to deteriorate? Can the range, including adjustments for winter or summer conditions, be achieved with the current SoH?	✓
3.	RESALE VALUE: Does selecting certain extras at the time of the initial purchase increase the resale value? For example, features such as a trailer coupling, DC charging option (if not included as standard), extended DC charging capacity, or extended AC charging capacity.	✓
4.	CHARGING POWER AND SPEED: Availability of DC charging options, AC three-phase charging, and maximum AC charging power.	✓
5.	HEATING / AIR CONDITIONING: Is a heating or cooling system needed for the cargo area?	✓
6.	TOWING LOAD: Has the towing capacity been considered, as electric vehicles often have lower towing capacities compared to conventionally powered vehicles?	✓
7.	DRIVING STYLE: Is brake-free driving required, such as for courier services?	✓
8.	INSURANCE: Does the insurer provide coverage for the battery's replacement cost?	✓
9.	STATE OF HEALTH (SoH): Has an independent and accurate SoH been determined to estimate the actual range? (An unrealistic SoH value of 100% claimed by the manufacturer, when it is actually only 80%, is misleading and frustrating.)	✓
10.	BATTERY TEST: Has the car's battery undergone regular independent tests?	✓

HYUNDAI: USED ELECTRIC CARS - ENSURING SAFETY

Full transparency when buying used electric cars: Since May 1, 2024, Hyundai Motor Deutschland GmbH has been partnering with AVILOO GmbH. With the AVILOO FLASH Test, the company provides a quick and easy test that assesses the functionality of the traction battery in just a few minutes.

In 2023, Hyundai Motor Germany launched a pilot program in which the first Hyundai dealers were equipped with AVILOO battery diagnostic devices to provide customers with peace of mind when buying a used car. This service is now being gradually expanded to all Hyundai Promise locations.

The independent AVILOO FLASH Test compares the actual usable energy of the battery with the energy available when the vehicle was new, providing an AVILOO score after a three-minute quick test. This score is derived from extensive test data and considers factors such as total energy consumption, charging and discharge cycles, and driving behavior through big data analysis.

A higher measured value indicates better battery condition. If substantial risks are detected, the

„Our partnership with Hyundai is strategically important to us. Our corporate values and commitment to transparency align perfectly with the ‘Hyundai Promise’ program. We are therefore delighted to be the chosen partner for battery diagnostics.“

Dr. Marcus Berger CEO AVILOO

FLASH Test issues a ‘red flag’ report detailing the type and nature of the fault, protecting buyers from unpleasant surprises when purchasing a car.

The used car program ‘Hyundai Promise - Tested Used Cars’ provides customers with security, transparency, trust, and convenience when purchasing a used Hyundai or a third-party model from a participating Hyundai dealer. This initiative supports Hyundai Motor Germany’s authorized dealers in professionalizing their used car business. Currently, there are 263 Hyundai Promise points of sale in Germany, and the number of dealerships participating in the program is steadily increasing. Last year, approximately 28,750 Hyundai Promise vehicles were sold.

„We are delighted to offer this special service to our customers throughout Germany. Equipped with the AVILOO Flash Test, our Hyundai Promise dealers will be able to perform quick battery tests on vehicles of all ages and nearly all models.“

Tobias Krumnikl, Hyundai Motor Germany



ARVAL: ENHANCING TRANSPARENCY IN THE USED CAR MARKET

Just as the age and mileage of combustion engine vehicles significantly impact their performance and value, the condition of the battery plays a crucial role in determining the performance and value of an electric vehicle. Therefore, to successfully buy or sell a used electric vehicle, you need detailed information about the condition of its battery.



In its commitment to offering the best support for new mobility solutions - tailored to individual needs and all situations - Arval Germany has introduced regular vehicle tests in collaboration with AVILOO Battery Diagnostics. This means that vehicle batteries are now tested during every conventional general inspection using AVILOO's independent, manufacturer-neutral, and objective diagnostic procedure. Arval Deutschland GmbH has been utilizing this new service since October 2023.

BATTERY DIAGNOSIS FOR SMART PURCHASING DECISIONS

AVILOO battery diagnoses provide a comprehensive picture of the battery's condition, showing its current state as a percentage compared to its new condition. This allows interested parties to gain precise insight into the remaining usable energy at the time of the test, based on the battery's original condition. Consequently, they can better estimate the range that the electric or plug-in hybrid vehicle can achieve and assess the value of the vehicle more accurately.

„With AVILOO as our new partner, we can provide interested parties with transparency and assurance regarding the battery status of an electric or plug-in hybrid vehicle, enabling them to make informed purchasing decisions. In this way, we aim to improve the marketing of our leasing returns for further life cycles.“

Christian Schüßler, Director Strategic Partnership, Arval Germany

„We are committed to transparency and clarity in the used e-car market. Our technology is neutral and highly accurate, as confirmed by various relevant organizations. We are very pleased to meet the strict and clear standards of a company like Arval.“

Dr. Marcus Berger CEO, AVILOO

With the new partnership, Arval Germany is once again expanding its service portfolio with an innovative offering, taking another step towards achieving the goals outlined in its strategic plan, Arval Beyond.

**BECOME AN AVILOO PARTNER
[HERE](#) OR QR-CODE**



TEST REPORT ON XXXXU710X03E3XXXX

PRACTICE REPORT

Error Pattern:
Noticeably Low Range – Cell Abnormality –
Performance Loss

SUMMARY OF THE ANALYSIS

The vehicle owner reported a significantly reduced range. To evaluate the battery health (SoH) neutrally and independently, the TÜV-certified PREMIUM Test was conducted at the customer's request.

The AVILOO Box was installed in the vehicle for data collection, and the customer drove their vehicle from 100% to a state of charge (SoC) of 10% as part of the test. In this particular case, the battery was even discharged to 5%. The data was recorded within a single day.

The accuracy of the PREMIUM Test is +/- 1%. The health status is assessed based on energy, providing a level of accuracy comparable to the significantly more expensive and complex WLTP range test.

As part of the service, the AVILOO engineering team not only performs routine tests but also strives to provide customers with a comprehensive and precise analysis of the results. This analysis is crucial for developing a deep understanding of the data and making well-founded recommendations based on it.

The vehicle has a noticeably low SoH of 73%, which explains the reduced range. Additionally, cell level 55 shows a significantly low cell voltage, which is concerning. Consequently, a loss of performance is understandable.



BATTERIEZERTIFIKAT



ILLUSTRATION 1: PREMIUM TEST CERTIFICATE

DETAILS

The PREMIUM Test result of February 25, 2024, shows that with 39,036 km, the SoH was 73%.

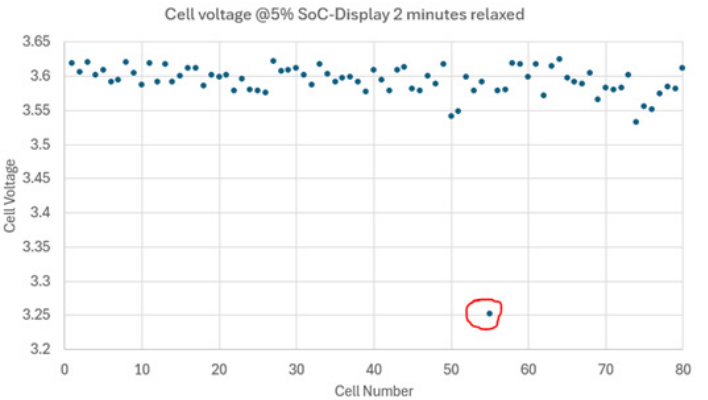
This SoH value is unusually low, especially considering the distance traveled. The car's range is reduced to only 73% of its original capacity.

Illustration 1 displays the first page of the battery certificate, with the notable values outlined in red. A detailed explanation of these values can be found on the following pages of the certificate.

The cell voltage spread at 5% SoC reached an exceptionally high value of 336 mV. This value is derived by subtracting the lowest cell voltage of 3.254 V from the highest cell voltage of 3.590 V. Diagram 1 shows all 80 cell voltages plotted, with the 55th cell level having the lowest voltage of 3.254 V (circled in red). No other cell levels exhibit abnormalities (e.g., #1, 2, etc., are not highlighted).

This deviation is extremely high and atypical, clearly indicating a problem with cell level 55.

When considering cell voltage at a higher SoC, such as 23%, cell level 55 still shows a significantly lower voltage. This is illustrated in Diagram 2, along with the corresponding table below. Cell level 55 has a voltage of 3.370 V, which is 240 mV lower than the highest cell voltage. This suggests a significant aging difference or a defect in cell level 55.



05.02.24, 12:42:28.091386 MEZ	VOLTAGE_CELL_MAX	3.59001
05.02.24, 12:42:28.091386 MEZ	VOLTAGE_CELL_MIN	3.2538

DIAGRAM 1: CELL VOLTAGES AT 5% SOC-DISPLAY

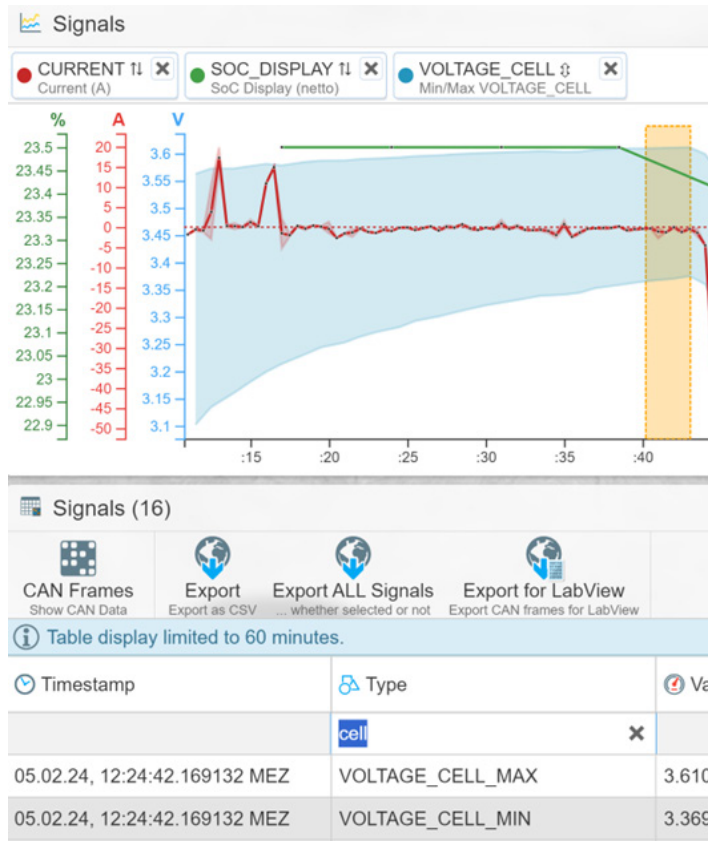


DIAGRAM 2: CELL VOLTAGES AT 23% SOC

CONCLUSION:

Due to the significant dispersion of cell voltages within a single cell level, particularly in cell level 55, the overall battery state of health (SoH) is well below average. The performance of the entire battery is significantly impacted by this particular cell level 55.

The vehicle owner should visit a specialist workshop for further investigation and correction of the issue. Balancing is unlikely to be effective, as all signs indicate a significantly weakened cell level 55. This test report is available for forwarding to the specialist workshop for troubleshooting.



AVILOO SHOW

REMARKETING CONGRESS WUERZBURG

A LOOK AT OUR BUSINESS EVENTS

At AVILOO, we focus on direct communication with customers and those interested in our technology. For this reason, we are actively represented at trade fairs, conferences, and congresses.

Dive into our world of battery diagnosis and experience firsthand how we showcase, discuss, and bring our innovative solutions to life. From engaging discussions to captivating product presentations, this photo report provides an authentic glimpse into our interactive events.



REMARKETING CONGRESS WUERZBURG
Cooperation with mobile.de



FLOTTE! DUESSELDORF
Michael Schneider (left) and Daniel Watschinger (right)
Senior Sales Managers

Everyone who met and spoke with our colleagues Daniel and Michael during the FLOTTE! in Dueseldorf received a free FLASH Test demo phase for their company (4 weeks with 5 FLASH Tests). How were they recognized? Besides their radiant smiles and exceptional friendliness, they wore distinctive AVILOO outfits—modern, dynamic, and full of energy!

See our dedicated teams in action as they interact with industry professionals and enthusiasts, showcasing our commitment to world-class battery diagnostic technology. This image gallery offers a glimpse into how AVILOO is shaping the future of battery diagnostics while building a strong connection with our community.



REMARKETING SUMMIT BERLIN



REMARKETING SUMMIT BERLIN

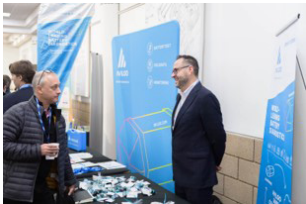
Experience the AVILOO Show and become inspired by our passion for innovation and customer engagement.



AUTOMOTIVE EVENT, NETHERLANDS
Cooperation with Elgersma



BVRLA INDUSTRY OUTLOOK CONFERENCE, ENGLAND
Cooperation with Maverick



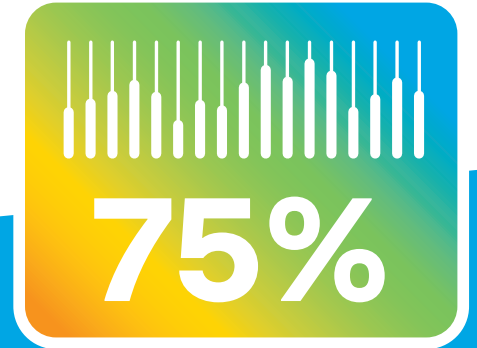
YOU CAN FIND THE CURRENT SCHEDULE OF THE FAIRS [HERE](#) OR QR-CODE





BATTERY DIAGNOSTICS

connect to detect.



STATE OF HEALTH (SoH)

SoH — A NEW MEASUREMENT IN REMARKETING

- From the global leader in battery diagnostics
- For all major electric cars and plug-in hybrids
- Manufacturer independent

