

# 800v systems





## Overview

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Does an 800-v EV need electrical design?

However, the design of an 800-V EV requires careful new considerations for all electrical systems. This article reviews the current state of 800-V vehicle powertrain electrical design and performs an analysis of benefits, challenges, and future trends regarding multiple vehicle powertrain components.

What is an 800-volt system architecture?

An 800-volt system architecture requires redesigning many components in an EV. (Image: Porsche.) These values are not as fixed as their name suggests. For example, a battery voltage range of 300 - 500 volts is referred to as a 400-volt architecture, and a 600 - 900 volt range is considered an 800-volt architecture.

Is high-power 800V a good choice for a low segment application?

Apr 06, 2022 // The entire industry is keeping an eye on high-power 800V developments which will set the bar for future electric mobility and become the new norm as soon as the infrastructure is widely accessible. Such 800V high-power systems are suitable for high and will be for low segment applications.

What are the benefits of an 800-v inverter?

Benefits of 800-V systems. BorgWarner's new 800-V inverter. The highest-voltage (800 V) wireless BMS, developed by LG Innotek. Although the high-voltage circuitry in electric vehicles (EVs), such as the electric compressor, dc-dc converter, etc., is built up around a 400-V system, 800-V alternatives are making a rapid rush to the head of the line.

Why do electric cars use 800V?

800V systems also allow a greater retention of power; a higher voltage allows a lower current to be used when charging the battery, which reduces



overheating and allows better power retention. This contributes towards a greater driving range. It also allows for weight reduction, as less copper is needed in the electric system.

Which EVs have 800-volt battery systems?

The transition to 800-volt EVs is already well underway. Automakers Porsche, Hyundai, Genesis, Kia and Audi already offer EVs with 800-volt battery systems. Volvo, Polestar and Lotus have also committed to 800-volt architectures. Hitachi Automotive Systems is starting mass production of its 800-volt battery system.



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### **New, 800V, electric cars, will recharge in half the time**

What drivers are most likely to notice, though, according to Dr Gillen, is that vehicles with 800V drive systems will be able to make greater use of some of the latest fast chargers. For instance

### **800-V Electric Vehicle Powertrains: Review and Analysis of ...**

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### **400 Volt vs. 800 Volt: die Vorteile hoher Batteriespannung in E**

In diesem Artikel: Vorteile der 800-Volt-Technologie So verringern sich die Ladezeiten Weniger Verbrauch trotz mehr Power Vorteile der 800-Volt-Technologie Geringeres Gewicht, höhere Dauerleistung und kürzere Ladezeiten: Das sind die Vorteile der 800-Volt

### **These EVs have 800V charging: Why it's better with or**

Why 800V matters more now than it did earlier this year In recent weeks various automakers, most recently Mercedes-Benz, have stepped up to embrace Tesla's NACS port its present V3 iteration



**800V systems in EVs enable longer ranges, faster ...**

External links and some functionality may no longer work. Electric vehicles (EVs) featuring 800V electrical systems could achieve much faster charging and reduced weight, allowing them to travel further between ...



**Five innovative 800V charging solutions for the next generation of ...**

Continental's universal 800V system's flexibility lies within the EV Recharging an electric vehicle still leaves something to be desired in terms of everyday user-friendliness. For example the selected charging station may only offer slow single-phase AC charging or alternatively, if it does offer high-speed DC charging, the vehicle itself may not be equipped ...



800V Cabin/ESS , VEHICLE THERMAL SYSTEMS

Optimize your battery's performance and enjoy cabin comfort with our 800V thermal management unit. Engineered specifically for high voltage applications, this advanced system combines seamless plug-and-play installation with superior thermal control.



### EE Times Europe

Increasing the battery voltage from 400 V to 800 V requires significant changes to the motor, inverter, conductors, insulation systems, and more. Among the possible technical limitations, the high-voltage conductors used at 800 V require greater insulation than is required for voltages up to 400 V.

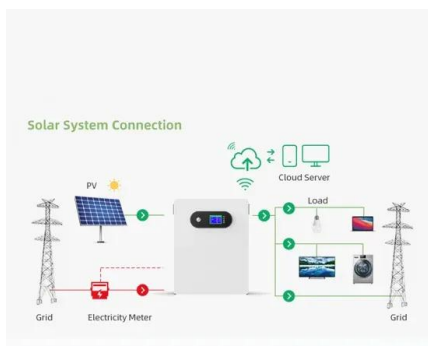


### Taking More Steps Toward Adopting 800-V Systems ...

Benefits of 800-V systems. BorgWarner's new 800-V inverter. The highest-voltage (800 V) wireless BMS, developed by LG Innotek. Although the high-voltage circuitry in electric

### Most Of The EV Industry To Shift To 800 Volts By 2025, Report ...

Out of the wide range of EVs available today, most run on 400 volts and only a handful have an 800-volt system, but that could change by 2025. But things won't stay like this for long, according



### "800-V systems will dominate the market in the future"

The 800-V system is expected to dominate the electric vehicle market in the future considering, for example, the thickness of the cable at the charging station, high voltage ...



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### 800 V Battery Management System (BMS) Reference

The RD-HVBMSC800BUN is a reference design bundle for 800 V high-voltage battery management systems (HVBMS). It provides a complete hardware solution including a RD-K358BMU battery management unit (BMU), a ...



### 800V Electric Vehicle Powertrains: Review and Analysis of ...

However, maintaining the charging voltage at the typical value of 400 V would necessitate increased current ratings for charging cables, leading to amplified system power losses. Some automotive



### SBD Explores:??? 800V ?????

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## A Battery Management System For 800 V Electric Vehicles

A decade ago, when EVs were just getting started, electrical systems carried around 200-300 volts. More recent EVs are built with 400 V systems, and a handful of EVs like the Porsche Taycan and Hyundai Ioniq 5 run with batteries that produce 800 V.



## SBD Explores: 800V EVs

800V batteries and systems are already offered by component manufacturers. This has enabled some automakers to adopt the technology and bring 800V vehicles to market. Charge point providers are expanding support for these types of vehicle by making in the

## Moving to Higher Voltages in Electric Vehicles Whitepaper

switch from the 400V battery systems widely used today to 800V battery systems. The 800V battery system offers twice the voltage and 2.7 times the power density compared to a 400V system, which translates to exactly what customers are looking for: the ability to drive further between charges and charge



## [New 800-Volt Fast Charging Systems](#)

Where Can I Get 800-Volt Charging? At the moment, 800-volt electrical systems are not commonplace in electric vehicles. The Porsche Taycan was the first EV available with an 800-volt architecture; its relative, the Audi e-tron GT, also has an 800-volt system, as do the Hyundai Ioniq 5 and Kia EV6.



### What's Driving EVs to Higher Battery Voltages?

Design considerations for the power solution in an 800-V system. How an 800-V bus system impacts EV design. How 800 V enables reduced charging time. How InnoSwitch3-AQ ICs deliver solutions for



### State-of-the-Art 800 V Electric Drive Systems: Inverter ...

This paper introduces a state-of-the-art inverter-machine codesign methodology for achieving an energy-efficient electric drive system. The methodology is applied in an optimal design case study with the context of the ...

### Power boost with 800V systems - development of high voltage

Compared to a 400V system, less current is required for an 800V inverter to transfer the same power. When running at a lower current with higher voltage, there is less loss as heat, and therefore smaller, lighter cables and connectors are required.



### Benefits and Design Challenges in Shifting EV Bus to 800V

Increasing the battery voltage from 400 V to 800 V requires significant changes to the motor, inverter, conductors, insulation systems, and more. Among the possible technical limitations, the high-voltage conductors used at 800 V require greater insulation than is required for voltages up to 400 V.



FUTURE HIGH VOLTAGE ARCHITECTURES FOR EVS

(50-500 kW) with 800 V in EU+CN+US\* 10 Public '400 V' Legacy (200 V to 500 V) '800 V' Future (200 V to ~950 V) 1 28 52 2021 2025 2030 \* Key assumptions: All newly built DC charging stations are 800 V compatible from 2023. Until 2023, only 350 kW DC



**High Voltage Vehicles: Why 800-Volt EVs are on the ...**

Many electric vehicle makers are transitioning from 400-volt to 800-volt systems for faster charging and higher efficiency--but some, like Tesla, are holding out.

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**???????? 800V ????**

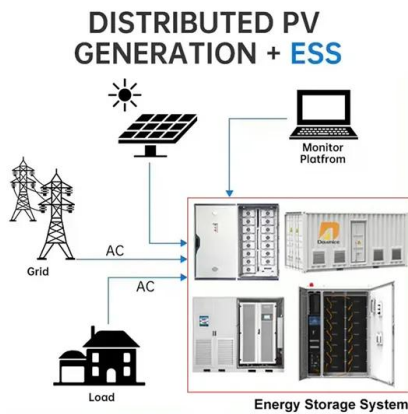
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### Advantages of 800V charging architecture

The 800V charging architecture features benefits including lower cable and battery costs, reduced thermal loss, higher system efficiency and longer driving distances on a single charge.



### **The Voltage Battle: 800V vs 400V Electric Car Batteries**

While many of today's electric vehicles use a 400V system, new models are emerging with 800V battery systems, signaling that the industry is leaning toward higher voltage systems as a standard. By diving deeper into 800V vs 400V, you can better understand the implications of this shift and how it may impact your decisions when considering an electric car.

### **800V - Wofür man die doppelte Spannung braucht**

800-V-System von 250 A. Dieser Ladestrom teilt sich im 4p3s-Zellmodul auf die vier jeweils parallel verschalteten Zellen auf, d.h. jede Zelle wird mit 125 A geladen. Im 800-V-System wird der Ladestrom von 250 A auf nur zwei Zellen aufgeteilt, die demnach



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### FACT SHEET 800 V Battery system

MAX. SYSTEM VOLTAGE (V) 800 CONFORMITY  
ECE R100, LV124, DIN EN 60664-1, ECE R10, CE,  
IP6K9K Specifications Parameters Benefits + 800  
V standard system comprised of 16 prismatic  
lithium-ion modules (16S1P) + Connection in  
parallel(up to



### **High Voltage Vehicles: Why 800-Volt EVs are on the ...**

The transition to 800-volt EVs is already well  
underway. Automakers Porsche, Hyundai,  
Genesis, Kia and Audi already offer EVs with  
800-volt battery systems. Volvo, Polestar and  
Lotus have also committed to 800 ...

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