



CTO's Handbook Modern EV Charging Revolution & Technologies

– Case Studies Included



EV Charging Revolution & Exploring the Technologies Behind It

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Introduction to EVs

Electric vehicles (EVs) are a type of vehicle powered by electric motors that use electricity stored in rechargeable batteries or other energy storage devices. The battery can be charged from an external power source or by regenerative braking.

Although Robert Anderson invented the first electric vehicle in **1832**, it was not until the late **19th century** that electric vehicles became feasible with the advent of the lead-acid battery. In **1891**, William Morrison built the first successful electric car.

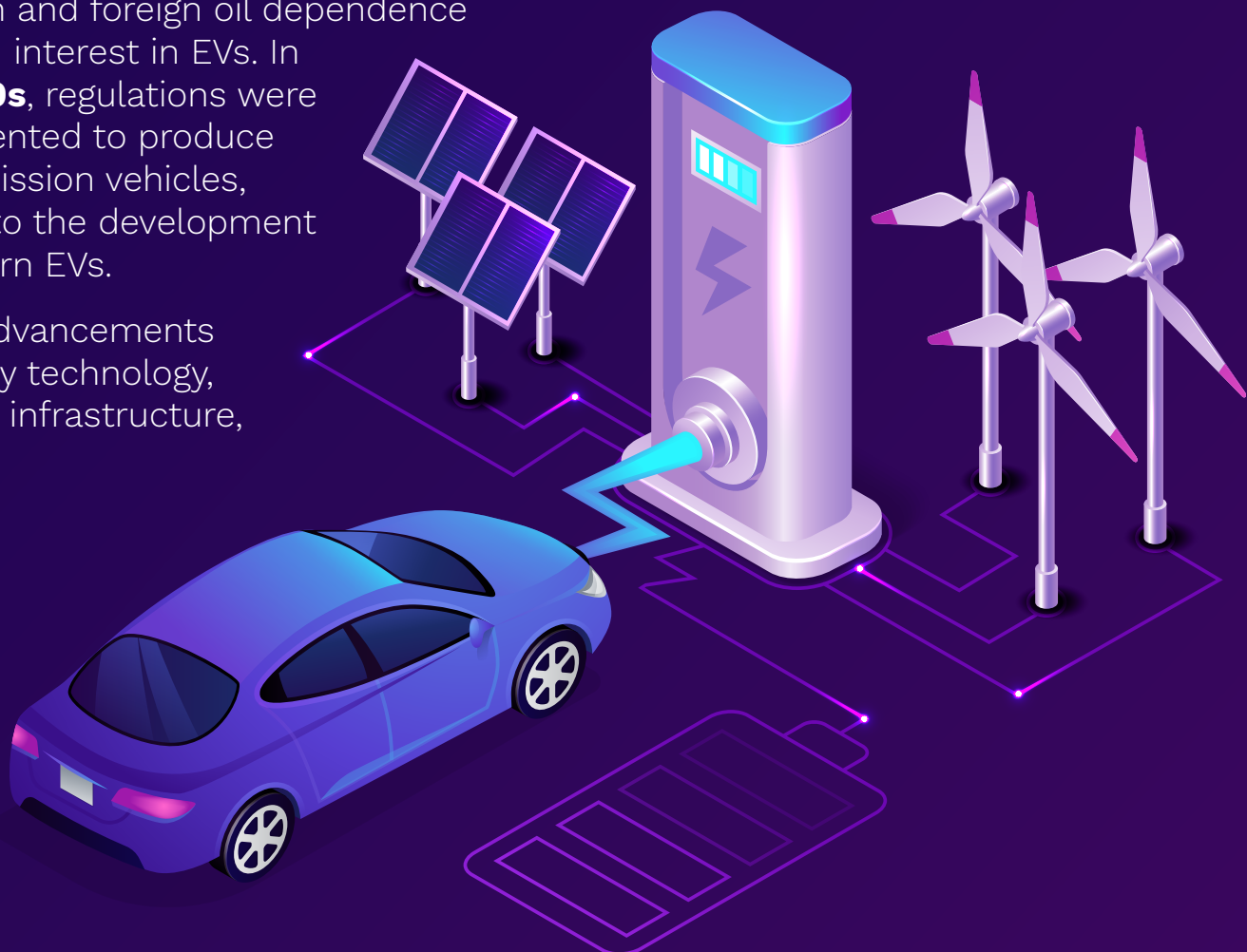
EVs gained popularity in cities due to their quietness and non-polluting nature in the early **20th century**, but the inflated cost of batteries and limited range hindered their popularity.

However, in the **1970s**, concerns about pollution and foreign oil dependence renewed interest in EVs. In the **1990s**, regulations were implemented to produce zero-emission vehicles, leading to the development of modern EVs.

Today, advancements in battery technology, charging infrastructure,

and environmental concerns have led to a surge in the popularity of EVs. The market is projected to grow at a compound annual growth rate of 18.2% between **2021** and **2030**, ultimately reaching **\$823.75 billion** by **2030**. Many automakers have announced plans to gradually phase out gasoline-powered cars. For example, in its recent advertisements, **Mercedes** has announced its plan to go completely electric by **2030**.

As mentioned earlier, the revolution in **battery technology** and **charging infrastructure** has been a significant driver behind the growing **demand for electric vehicles (EVs)**. This eBook aims to provide a comprehensive explanation of the innovations and technologies that have fueled this development.





EV Revolution Powered by the Innovations in EV Charging

- Electric Mobility: A Shift Towards a New Era in the Automotive Industry
- Digital Transformation - Leading The Way For EV Charging Value Chain
- Top Six Charging Innovations For Electric Vehicles
- An Overview Of Electric Vehicle Charging Station Infrastructure



Electric Mobility

A Shift Towards a New Era in the Automotive Industry

Electric mobility is revolutionizing transportation as electric vehicles (EVs) become increasingly affordable and popular.

The impact of electric mobility on our lives includes a shift in customer preferences towards clean fuel and tangible benefits such as monetary incentives, lower maintenance costs, and the integration of all transport-related services into a single on-demand Mobility as a Service (MaaS) platform.

The adoption of electric mobility offers customers intelligent driving, remote vehicle access, and connected mobility, bundled with attractive government incentives. Moreover, the influence of electric mobility spans throughout the entire value chain, requiring vehicle manufacturers, automotive component makers (ACMs), and

the after-market industry to restructure their supply chain and increase collaboration efforts.

EV charging infrastructure will be critical, with a robust charging infrastructure covering the installation, operation, and maintenance of charging stations, as well as add-on services such as charging station location finding, billing, vehicle diagnostics, real-time traffic information, and emergency assistance.

Big Data and AI technologies can transform the mobility industry into one that is leaner, safer, and provides a better customer experience, with business opportunities opening for OEMs, telecom operators, content providers, and insurance companies, among others.



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Digital Transformation

Leading The Way For EV Charging Value Chain

According to McKinsey's research, there will be over **130 million** electric vehicles (EVs) on the road by **2030**. However, updating the charging infrastructure will be crucial to scaling the industry. While digital technologies have become an integral part of vehicle development, EVs primarily rely on the battery pack and charging systems.

Key challenges faced by the EV charging industry include interoperability, equipment selection, charging times, grid capacity, transparency, and cyberattacks. EV charging stakeholders are investing heavily in digital transformation technologies to overcome these challenges.

Some of the key trends shaping the future of the e-Mobility/EVSE industry include -

- Charging protocols
- Smart charging
- Vehicle-to-grid (V2G)
- Wireless charging.

The adoption of common protocols and standards such as OCPP, OCPI, ISO15118, and OpenADR will ensure safety and smooth communication between stakeholders.

Smart charging and V2G will allow efficient management of the grid capacity utilization and peak load at the charging stations. Wireless charging allows vehicles to be charged at rates ranging from 3.3 to 20 kW, and new advancements such as DEVC can charge a moving car.



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Top Six Charging Innovations For Electric Vehicles

The International Energy Agency predicts that electric vehicles will grow from **3 million to 125 million by 2030**, necessitating a significant increase in charging stations to accommodate the growing number of EVs. To meet this need, several innovations have emerged, including -

1. Wireless Electric Vehicle Charging System
2. Pop-Up Pavement Chargers
3. Roadside Street EV Car Charging Cabinets
4. Lamp post EV charging points
5. Self-Heating Batteries
6. Electric Roads



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According to Markets and Markets, the global electric vehicle (EV) charging station market size is expected to grow from **2,115 thousand units in 2020 to 30,758 thousand units by 2027**

An Overview Of Electric Vehicle Charging Station Infrastructure

According to Markets and Markets, the global electric vehicle (EV) charging station market size is expected to grow from **2,115 thousand units in 2020 to 30,758 thousand units by 2027**, indicating a shift towards EVs from conventional vehicles. The need to develop adequate EV charging infrastructure to meet the rising demand for EVs on the road is crucial.

To address range anxiety among EV users, charging infrastructure needs to be enhanced alongside the development of long-range battery vehicles. EV charging solution providers focus on providing innovative and reliable e-mobility charging solutions that create a digital space linking vehicles, buildings, and utilities. The types of EV charging include Level-1, Level-2, and Level-3 chargers with different charging times and power needs.

An EV's efficiency is based on the power from the charging station and on external factors such as traffic and temperature. The EV charging station comprises an EV charger, power grid, facility meter, energy controller, software platform, and other relevant components. The power storage system comprises a battery, power conversion system, and software.

EV charging software is an essential part of the charging infrastructure, helping operators manage EV charging stations and customers. Residential charging is one of the business use cases of EV charging solutions, providing easy-to-install EV chargers for individual houses, housing societies, and residential buildings.



Get to know more about the topic

Case Study

Electric Vehicle Charging Station for eMobility

The client was a multinational conglomerate that focused on industrial products and solutions. They were expanding their electric vehicle charging solutions and partnered with elnfochips to develop an upgraded, affordable, smart, and connected multi-variant charging solution.

elnfochips was selected based on its successful previous collaboration with the client and its expertise in hardware, firmware, software, connectivity, and testing.

In recognition of the outstanding work on this project, elnfochips was awarded the NASSCOM Engineering & Innovation Excellence Award in 2021.

Highlights

- End-to-End Product Development- Hardware, Firmware, Software
- Car Simulator Design & Test Automation
- Wi-Fi, Bluetooth, USB, & Modbus Connectivity
- NASSCOM Engineering & Innovation Excellence Award 2021

Benefits to Client

- Reduction in BoM Cost
- The feature-rich solution to bring sustainable market differentiation
- Highly scalable to add new variants to cater to localization requirements
- Superior quality & faster time to market through test automation

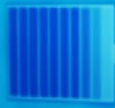


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EV
CHARGING

94%



Technologies Involved in EV Charging

- Understanding Bi-directional EV Charging
- A Closer Look At OCPP (Open Charge Point Protocol) And Its Growing Importance To The EV Charging Systems
- Role Of Iot In Fueling EV Charging Future Growth
- Understanding The Role Of BMS In Electric Vehicles
- How OpenADR Revolutionizes the Connection Between EV Fleets and the Grid
- Understanding Electric Vehicle Telematics

Understanding Bi-directional EV Charging

The Rocky Mountain Institute predicts that if all light-duty vehicles in the US are electrified, approximately **250 million EVs** will be on the road, **increasing annual energy consumption by 25%**. Therefore, an EV ecosystem capable of supporting the grid with bi-directional energy flow is necessary.

Bi-directional energy flow refers to the ability of an EV charging infrastructure to enable power flow from the grid to the vehicle and from the vehicle to the grid. This can be achieved by implementing V2G communication and embedding the EV charger with a DC to AC converter and V2G communication capability. Bi-directional chargers can also assist in powering homes and buildings (V2H and V2B) by utilizing battery power during peak load hours, reducing grid surge, and charging the vehicle during off-peak hours. The **15118-communication standard** defined by the ISO/IEC enables bi-directional communication.

The advantages of bi-directional charging include the ability of EV owners to earn money by selling excess energy back to the grid and saving money by using grid power during low load times, as many countries across Europe and the US offer variable energy pricing.



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A Closer Look At OCPP (Open Charge Point Protocol) And Its Growing Importance To The EV Charging Systems

Open Charge Point Protocol (OCPP)

is a license-free, vendor-agnostic communication protocol that facilitates transparent communication between EV chargers and the backend charging station management system (CSMS). OCPP has become a de facto standard in the EV charging ecosystem and enables interoperability between hardware and software solution providers.

Before OCPP, closed systems working on proprietary communication protocols made it difficult to switch to different charging software or equipment. OCPP protocols such as 1.6 and 2.0.1 have been developed over time to include smart charging features, security, and certification programs to validate protocol implementation.

OCPP 2.0.1 is the latest protocol, launched in 2020, with added functionalities of device management, smart charging, ISO 15118 (V2G) support, and enhanced security measures. OCPP offers numerous benefits such as flexibility, interoperability, scalability, and future-proof investment.

However, implementing OCPP requires careful consideration, such as protocol selection, integration testing, and migration from earlier versions. As interoperability requirements in the EV charging ecosystem grow, OCPP compliance has become inevitable. EV charging vendors should seek expert assistance for OCPP implementation, testing, and developing a future-proof infrastructure.



Get to know more about the topic





Case Study

EV Charging Management Platform Development

The client wanted to develop an OCPP compliant charging management system to remotely monitor and control their fleet of residential and commercial EV chargers. eInfochips built an **OCPP 1.6J** compliant web-based charger management platform utilizing **10+ Azure cloud services**. This platform provides real-time insights into the charger's status, generates reports & alerts, and offers integration with charging hardware for a seamless customer experience. eInfochips also developed a cross-platform mobile and web application for remote monitoring and control of the EV chargers.

Key Accomplishments

- Created a web-based charger management platform that complies with **OCPP standards**
- Utilized over **10 Azure services** to establish a cloud-based infrastructure and construct data pipelines
- Designed a **mobile and web application** that can be used across multiple platforms for remote monitoring and control

Benefits to Client

- Developed an all-integrated EV charging solution - EV charger, mobile app, and management platform, and **reduced time-to-market by 6 months**
- **30% reduction** in support issues with remote management



Download the case study
to read in detail



Role Of IOT In Fueling EV Charging Future Growth

By **2030, over 40%** of the economic value generated by the **Internet of Things (IoT)** will be contributed by operations optimization, accounting for **\$1.3 trillion**, according to McKinsey. With the rise of electric vehicle (EV) sales, developing a robust charging infrastructure has become crucial. The challenge lies in managing a dispersed fleet of devices, and IoT can help overcome this problem.

IoT in EV charging comprises charging equipment, mobile apps, and charging management platforms. It enables continuous monitoring, data analytics, and real-time alerts and notifications. The potential benefits of IoT in EV charging

include user authentication, charger availability, automated operations, smart charging, remote management, and EVSE control. IoT enables charge point operators to remotely manage operations and resolve issues, thereby reducing downtime.

The chargers can automatically start charging when they find the lowest rates available from the grid and vice versa, saving costs and helping grid operators manage the surge in energy demand. The EV charging industry can scale to new heights with the help of IoT, allowing for an enhanced EV charging experience for all stakeholders in the value chain.



Get to know more about the topic



Understanding The Role Of BMS In Electric Vehicles

Electric vehicles run on rechargeable battery packs that produce several hundred volts of electricity. As a critical component of the vehicle, the battery requires constant monitoring and control, which is provided by the Battery Management System (BMS).

The need for BMS

The BMS is an embedded system that monitors the battery pack's state of charge (SOC) and state of health, ensuring that the battery runs efficiently without chances of failure. Lithium-ion batteries power most electric cars, and these battery packs, even though not very big, can be highly unstable. Therefore, BMS monitors its voltage and current to prevent any overcharging or deep discharge that could harm the battery's lifespan or capacity.

How does BMS aid battery charging?

Designing a BMS requires considering numerous factors, such as its end application. The BMS ensures that the battery operates within the safety parameters and is not discharged beyond the 3V mark. Charging control is another area that requires BMS monitoring, ensuring that the two-stage charging process, Constant Current (CC) and Constant Voltage (CV), operates seamlessly. BMS also helps in indicating the battery state of charge (SOC) and state of health (SOH) to determine the mileage on each charge.



Get to know more about the topic

How OpenADR Revolutionizes the Connection Between EV Fleets and the Grid

The increasing number of EVs on the road puts a strain on the electrical grid during peak hours. Open Automated Demand Response (OpenADR) is a communication standard that enables automated and secure two-way communication between electricity providers and customers to manage demand for electricity in real-time, improve grid efficiency and reliability, reduce costs, and support renewable energy integration.

OpenADR allows customers to automatically adjust their electricity usage in response to changes in supply and demand, reducing the need for expensive and polluting “peaker” power plants used during high demand times. It also enables distributed energy resources, such as solar panels and battery storage. OpenADR helps manage the ever-growing demand for EV charging stations by providing signals to charge vehicles during off-peak hours, reducing the need for expensive grid upgrades and improving overall grid reliability.

OpenADR 2.0 is the latest version of the communication standard and offers improved security, increased scalability, and better interoperability. By combining OpenADR and the Open Charge Point Protocol (OCPP), EVs can become demand response assets, helping stabilize the grid and serving as batteries instead of draining the grid.



Get to know more
about the topic





According to a report by Fortune Business Insights, the worldwide market for EV Telematics was valued at **USD 413.1 million in 2019** and is anticipated to expand at a CAGR of 20.3% over the forecast period, reaching **USD 1095.4 million by 2027**.

Understanding Electric Vehicle Telematics

EV telematics enables services such as navigation and tracking systems, charging methods, and driving analysis. Navigation systems provide real-time traffic updates and recommendations for the best routes with charging stations available. Charging methods calculate the optimal place for charging while accounting for battery charge status and distance a vehicle can travel.

Driving analysis records distance traveled, time taken, over speeding during the journey, malfunctioning, records exceptional events, and warnings. Telematics technology enables the development of charging station infrastructure and the best telematics solutions covering hardware, firmware, software, and cloud applications.



Get to know more about the topic

Case Study

System-on-Module Design for Infotainment Unit of Electric Vehicle

An APAC-based automotive OEM aimed to produce electric vehicles and required a system on module (SOM) for its infotainment and entertainment systems. As they lacked in-house experience, elnfochips was selected to provide an end-to-end solution for hardware designing, firmware development, and testing. The automotive-grade SOM developed by elnfochips supports dual OS (QNX, Android), three cameras, Qualcomm Snapdragon SD820A, and Wi-Fi, Bluetooth, and HDMI 2.0.

Key Accomplishments

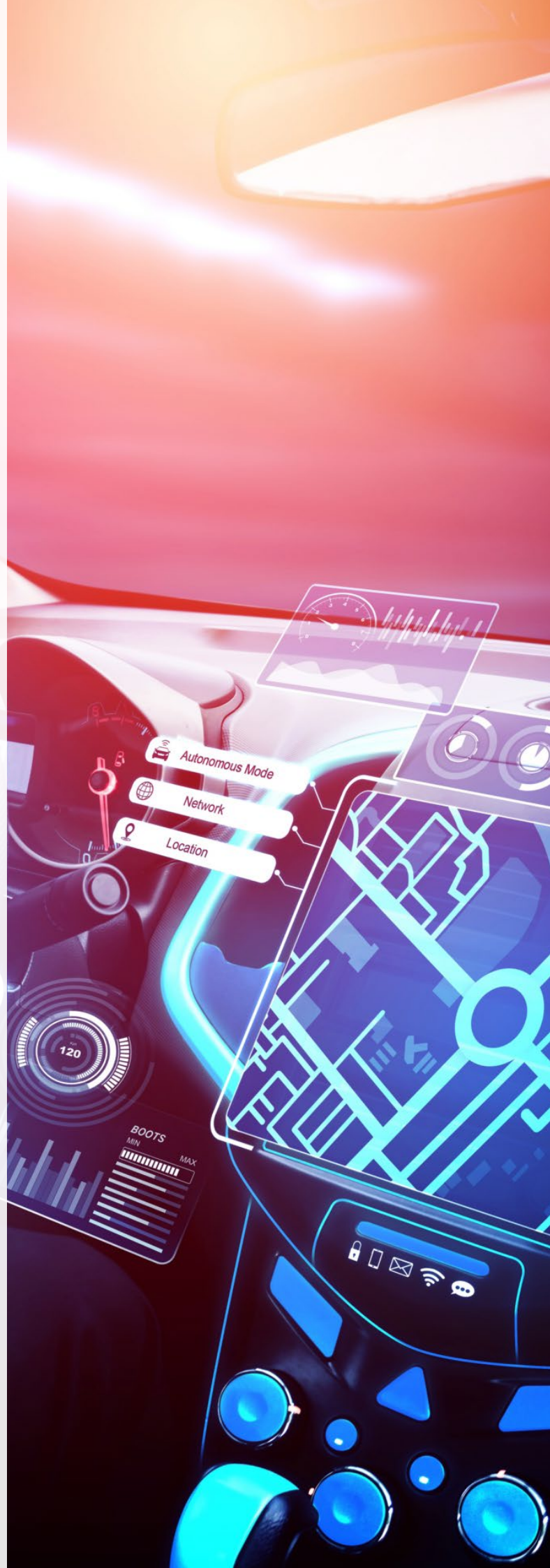
- Hardware & Embedded Software Development
- Supports Dual OS (QNX, Android), 3 Cameras
- Qualcomm Snapdragon SD820A
- Wi-Fi, Bluetooth and HDMI 2.0

Benefits to Client

- Faster time to market
- High-performance AI capabilities
- Scalability achieved through Qualcomm hypervisor
- First time right- no jumper on SOM
- Achieved ultra-small form factor of SOM (84mm x 42mm)
- Improved production yield by eliminating complex hardware design constraints & making it standardized for automotive-grade manufacturing



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to read in detail





Digitization

EV Smart Charging Mobile/Web App Development

The growing popularity of electric vehicles (EVs) has resulted in a surge of EV charging mobile applications on app stores. To develop an efficient EV charging app, developers must consider key features such as user management, charger lists, trip planning based on charge capacity, charger onboarding via QR code, slot booking, real-time battery charging status, diagnostics, error reporting, and payments and billing records.

In addition, developers must also consider several factors, including technical complexity, real-time status, IoT/cloud backend, target users, and eCommerce integration. EV charging apps require a thorough understanding of charging hardware and software systems to create an easy-to-use and seamless experience.



Get to know more about the topic



Case Study

End-To-End Design & Development of EV Charging Station for Residential and Commercial Applications

The client wanted to expand globally and develop a range of next-generation level 2 EV chargers that supported multi-product variants, wireless connectivity options, and OCPP protocol. eInfochips provided an end-to-end design and development solution, including hardware and firmware, industrial and mechanical design, wireless connectivity options, and a mobile/web app for remote monitoring and charging management. The team at eInfochips also ensured compliance with protocols such as OCPP, HomePlug GreenPHY, Wi-Fi, Bluetooth, NFC, and 4G/LTE. eInfochips delivered a turnkey product development solution that accelerated time-to-market.

Key Accomplishments

- Turnkey Product Development – Hardware/firmware, mechanical design, pre-compliance testing
- Smart charging mobile & web App for EVSE control, scheduled charging, and remote management
- Protocols & Connectivity – OCPP, HomePlug GreenPHY, Wi-Fi, Bluetooth, NFC and 4G/LTE

Benefits to Client

- Developed 3 strategic variants (Basic, Intelligent, Pro) and flexible connectivity options – enabling the client to develop a self-configure customer portal
- BoM Optimization helped the client to extend the product lifecycle by **5 years** and reduced time-to market by **6 months**



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How ISO 21434 Impacts EV Cybersecurity

As electronic and electrical components' footprints grow significantly in road vehicles, protecting the vehicle's telemetry, navigation, safety, and data from cyberattacks is crucial in every stage of design, development, and deployment. The **ISO 21434 standard** was developed to ensure that hyperconnected vehicles are safe for the occupants and other vehicles on the roads, and its adoption in designing and deploying EVs helps mitigate cybersecurity challenges.

EVs have a significant footprint of embedded system software, firmware, and user applications, all vulnerable to cyber-attacks. Charging infrastructure and electrical grids also pose cybersecurity risks. **ISO 21434** outlines engineering considerations for secure road vehicles across modalities, from secure product lifecycle activities to threat analysis and risk assessment. The standard explains a practical approach to ensuring cybersecurity, ensuring an end-to-end security enablement approach for connected vehicles, and outlining attack paths and feasibility ratings of attacks.

It also features factors that impact the risk value and subsequent treatment decisions for the ascertained risk value.



Get to know more about the topic

Case Study

EV Heater Controller Development & Cybersecurity

The client wanted to develop an EV-Smart Heater system for Trucks and HVs with functional safety ASIL A level. While the mechanical design was in-house, elnfochips provided an end-to-end solution for electronics hardware, firmware design, and heating coil logic development.

elnfochips also worked on isolation circuitry between high to low voltage systems using microcontroller and IGBT-based control design for the heating coil of the heater.

Key Accomplishments

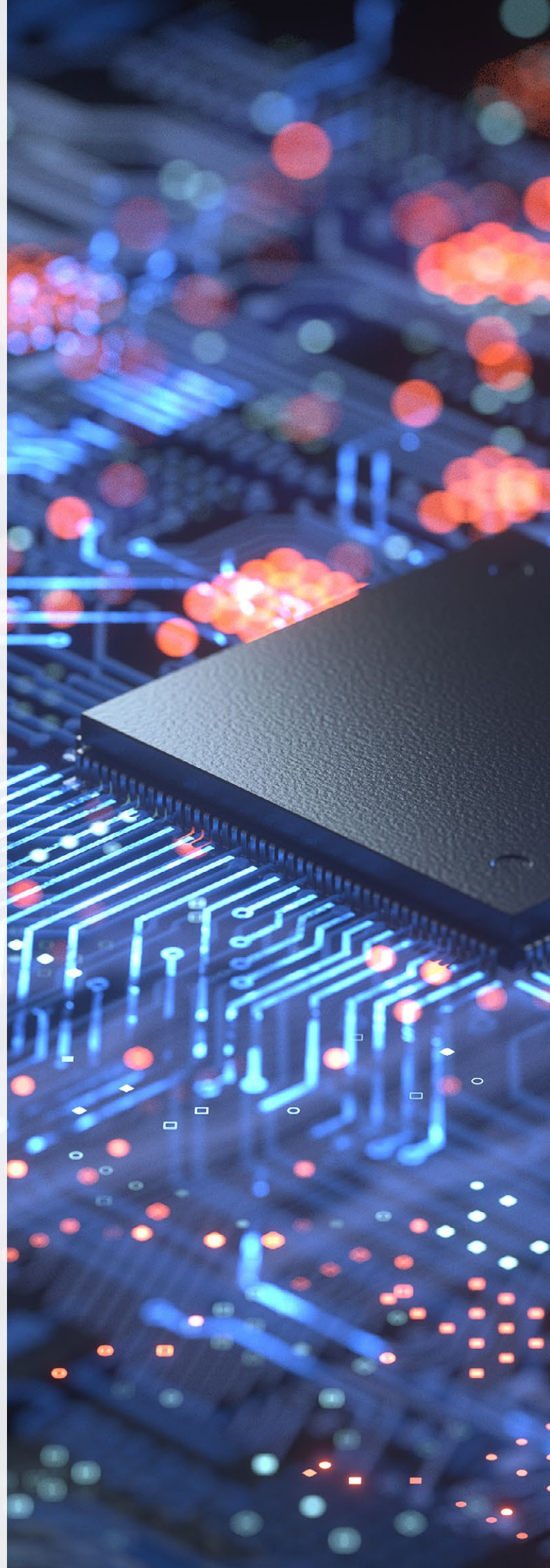
- ISO 26262 ASIL A compliant development
- Cyber Security - Threat modeling, penetration testing
- Smart Heater for EV trucks and Heavy Vehicles
- SPC5 32-bit Automotive Micro Controller
- IGBT Controller - Up to 800V & 18 kW
- Isolation Circuit (4KV isolation between low & high voltage)

Benefits to Client

- Meeting with the Delivery on time
- Mitigated pandemic related supply chain issues
- Significant reduction in engineering total cost of ownership



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According to a report by Grand View Research, the EV charging solutions market is expected to reach **\$217.06 billion by 2030**, growing at a **CAGR of 30.6%** from 2022 to 2030.

EV Charging Solutions Trends to Watch in 2023

The Future of EV charging Infrastructure

According to a report by Grand View Research, the EV charging solutions market is expected to reach **\$217.06 billion by 2030**, growing at a **CAGR of 30.6% from 2022 to 2030**.

There are several trends in the EV charging market to keep an eye on, such as **the adoption of the Plug and Charge standard, Smart EV Charging, and vehicle-to-grid technology**, which allows EVs to interact with the power grid and provide services to the grid by sending excess energy stored in the EV's battery back to the grid. Additionally,

there is a move towards the **Open Charge Point Protocol (OCPP 2.0.1)**, which addresses the need for faster and more efficient power delivery.

New business models are also emerging, with companies offering services around EV charging. Finally, the concept of **EV roaming** allows EV owners to charge their vehicle anywhere, anytime. The future of EV charging looks promising, with advancements in technology leading to a more convenient, efficient, and cost-effective experience for EV owners.



Get to know more about the topic

A Peek into the Capabilities of eInfochips for Automotive, Including EVs

eInfochips, a leading provider of product engineering services, has significant capabilities in the electric vehicle (EV) domain. The company's expertise spans across various areas, including -

- EV charging stations design and development
- Battery management system
- **EV HVAC** and motor controller design
- Protocol integration and connectivity
- Mobile and web app development
- Remote monitoring for charging infrastructure

In addition to these capabilities, eInfochips also offers services under these technologies and sub-domains for automotives -

- ADAS (Advanced Driver Assistance Systems) & Autonomous Vehicles
- Connected Vehicles and Telematics
- Infotainment & Cluster
- **AUTOSAR**
- Functional Safety (ISO26262)
- MBD (Model Based Design) & Auto-Code Generation



Get detailed information
about eInfochips' services in
the Automotive Sector here.



Leading the Charge

Perspectives on the Future of EVs and
Charging Infrastructure



Mohan Wankhede

Senior Director Engineering,
Automotive

Empowering EV Charging Technologies with Sustainable Energy Focus

The sales of electric vehicles have witnessed a remarkable increase, almost doubling in 2021, and surpassing 6 million units globally. This is a significant upsurge from the 100,000 electric vehicles sold globally in 2011. Advancements in battery technology, semiconductor ecosystem, battery management systems, and energy storage systems are key drivers behind this innovative and consumer-oriented trend.

The year 2022 witnessed an extraordinary 60% hike in electric vehicle sales globally compared to the previous year, indicating a massive potential for electric vehicle infrastructure. By 2030, we can expect electric vehicle charging stations to become as prevalent as gas stations, offering a variety of charging options, including Level 2/3 or Super Charger.

As an early adopter of electric vehicle charging technology, with a strong emphasis on sustainable green energy initiatives, eInfochips is already supporting numerous original equipment manufacturers with our innovative product engineering services to design their electric vehicle charging infrastructure.

We provide comprehensive solutions, including hardware, software, and mechanical designs for L1/L2/L3 charging systems, some of which have already been deployed in the global market. Our cutting-edge expertise in electric vehicle charging space and accelerators for OCPP, V2G, OCPP, OCPI, ISO15118, and base platform software with cloud expertise, enables OEMs to reduce time to market, providing unparalleled benefits to our clients.



Providing Turnkey Solutions for EV Charging Infrastructure to Contribute to the Global Growth

Despite the global energy crisis, supply chain disruptions, and COVID-related challenges, the demand for electric vehicles (EVs) across the globe doubled in 2021, accounting for 13% of all vehicle sales. As a reflection of the EV market's growth, the EV charging infrastructure market observed an almost doubled annual spending of \$62 billion last year, and cumulative spending on charging hardware, installation, and maintenance could reach \$200 billion by 2026.

The EV value chain, which includes automakers, energy and utilities, and mainstream charging companies, is undergoing a significant transition to innovate and launch their products and services to create differentiation.

With award-winning and turnkey solutions developed for leading players in the industry, elnfochips aims to act as a one-stop solution for EV charging stakeholders, including charger manufacturers, energy storage/management solution providers, grid and utilities, and mobility service providers (e-MSPs), among others.

elnfochips has in-depth experience in developing e-Mobility solutions, including OCPP-compliant EV charging hardware/software, battery management systems (BMS), IoT platforms for energy management solutions, and high-voltage AC/DC converters, among others.

To fast-track the development for our customers, we have also developed accelerators, such as the OCPP client, Open Alliance Certification support, OpenADR integration, charging app framework with 150+ screen mockups, and test suite with over 275+ test scenarios executed, among others.



Dhaval Bhagora

Manager, Product
Marketing (Automotive)



The Future of EV Charging

Ultra-Fast 5-Minute Charging

The future of electric vehicle charging is heading towards ultra-fast charging, thanks to **NASA's research**. Soon, chargers may be able to fully charge an EV in as little as **five minutes**, a significant improvement from current charging times.

One of the major challenges in fast charging is managing the heat generated by high currents. **NASA** has identified that to achieve a **five-minute charge**, the charger needs to deliver **1,400 amperes**, whereas current chargers only go up to around **520 amperes**. This results in a substantial amount of heat generation.

To address this issue, companies and research organizations are exploring solutions such as the **“Flow Boiling Module” (FBM)** as part of the **FBCE**, which uses a technique called **“subcooled flow boiling.”** When the liquid inside the FBM begins to boil, it draws cooler liquid from the inner part of the flow channel to the walls, efficiently transferring heat by leveraging the change of phase from liquid to vapor.

The next few years are going to be critically important for EV charging. Don't wait, join the cutting-edge superfast EV charging revolution today!



Download our comprehensive
EV Charging Solutions Brochure

Awards & Accolades



**NASSCOM®
ENGINEERING
& INNOVATION
EXCELLENCE AWARDS 2021**

eInfochips wins Next-Gen Product of the Year (Engineering Service Providers) for Electric Vehicle Charging Station project, in the first edition of NASSCOM Engineering & Innovation Excellence Awards 2021



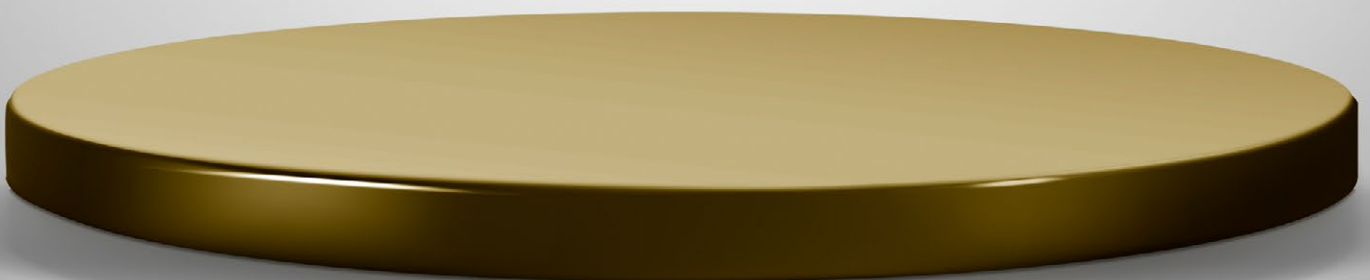
eInfochips has been successfully assessed and certified for automotive spice® v3.1 capability level 2 (cl2) for vda – sw scope for Pune (India) location



Einfochips has been recognized as the “Design Services Company of the Year (Enterprise Category)” for the year 2020 By The Indian Electronics & Semiconductor Association (Iesa).



Click here to view the awards and accolades we have earned over the past two n half decades.





About eInfochips

eInfochips, an Arrow Electronics company, is a leading provider of digital transformation and product engineering services. eInfochips accelerates time to market for its customers with its expertise in the areas of IoT, AI/ML, security, sensors, wireless, cloud, and power. eInfochips has been recognized as a leader in Engineering & R&D services by many top analysts and industry bodies, including Gartner, Zinnov, ISG, IDC, NASSCOM, and others.

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