

Case Studies

Nidec



Powering Nidec's Revolutionary DC Fast Chargers

Scaling Beyond Limits: Nidec's Vision

When Nidec Conversion set out to design their next-generation DC fast charger, the goal was clear: a scalable, future-proof system capable of supporting charging rates up to **480 kW+**. Their innovative **DC Split** architecture separated power units from dispensers to create a distributed system that was both cost-efficient and effortlessly scalable.

What Nidec needed was a software backbone that could keep pace with this hardware innovation — flexible enough to enable a distributed setup, and robust enough to remain compliant with current and emerging industry standards.

The Perfect Match: EVerest Foundation with Stabilized Modules

Pionix supported Nidec with a software stack based on **EVerest (LF Energy)**, enhanced with stabilizations formerly developed in **BaseCamp**. This combination delivered:

- Support for a distributed charging architecture with multiple dispensers
- Integration of advanced communication protocols including **OCPP 2.0.1** and **ISO 15118**
- Built-in, security-first design with TPM integration and X.509 PKI updates
- Faster time-to-market through comprehensive developer tooling

Most importantly, the **modular architecture** aligned perfectly with Nidec's **DC Split** concept, enabling independent scaling of power and dispenser units — a key differentiator in their market approach.

Engineering the Split: From Vision to Rollout

Close collaboration between Pionix and Nidec engineers made it possible to turn vision into reality. Together we:

- Customized module configurations for the distributed architecture
- Optimized **power management algorithms** across multiple charging points
- Implemented **enhanced security protocols** from day one
- Built **simulation environments** to accelerate testing and validation

"This solution delivered the scalability and flexibility we demanded. It allows us to meet both current and future market demands while upholding the highest standards of security and performance."

— Gilbert Khawam, EVCI Business Leader at Nidec Conversion

Business Value: Scaling Fast, Staying Flexible

For Nidec Conversion, the collaboration went far beyond technical success:

- **Market Differentiation** — pairing Nidec's hardware innovation with a flexible open-source-based software layer created a unique offering in the crowded DC fast charging market.
- **Accelerated Development** — the Pionix toolset and engineering support enabled faster rollout than initially planned.
- **Future-Ready Architecture** — as new standards emerge, updates can be implemented without large redevelopment efforts, protecting both investment and customers.

Looking Ahead

The successful launch of Nidec's DC Split architecture marks the start of a shared journey toward smarter, scalable EV infrastructure. Together, Pionix and Nidec are already exploring:

- Advanced **energy management systems**
- **Bidirectional charging** based on **ISO 15118-20**
- Expanded **analytics and remote diagnostics** for optimized uptime
- Tailored solutions for **heavy-duty vehicles** and complex logistics hubs

The Pionix Advantage

The Nidec project highlights the principles Pionix stands for:

- **Modularity matters** — flexible architecture adapts to innovative hardware concepts
- **Developer experience drives innovation** — tools that accelerate progress
- **Open source creates resilience** — community-driven software ensures future-proofing
- **Security must be integrated, not added** — trust is built in by design