RAILWAY SOLUTIONS

Empowering Smarter Railway Infrastructure

Keeping rail and transport systems powered, monitored and operational 24/7.



Your partner for safer railways



Engineering Power, Control & Monitoring for Critical Infrastructure

Alpha Innovations develops and manufactures custom power solutions, monitoring platforms, and integrated systems for railway and other mission-critical infrastructures. As a specialist in complex energy, control, and communication systems, we help operators improve reliability, availability, and operational efficiency.

Our expertise combines power electronics, software, monitoring, control systems, and integration capabilities to deliver complete solutions tailored to each application. From trackside systems and signaling infrastructures to intelligent monitoring platforms and Power & Control Cabinets, we transform complexity into reliable operational solutions.

Our mission is simple

To make railway infrastructure smarter, safer, and more resilient through advanced energy and monitoring technologies.

Why choose Alpha Innovations?

Local Agility. Global Strength.

Alpha Innovations is part of the CE+T Group, an international technology group specialized in energy conversion, power electronics, BESS, monitoring, and energy management solutions. Founded in Belgium in 1934, CE+T has become a recognized global player delivering innovative energy solutions across critical industries worldwide.

Today, the group combines decades of engineering expertise with a strong innovation culture driven by research and development.

- €99 million consolidated turnover
- Approximately 400 employees worldwide
- 7 R&D centers
- 6 production sites
- More than 90 active patents
- International presence across Europe, America, Asia, the Middle East, and Australia

The Strength of the Group

Being part of CE+T Group gives Alpha Innovations access to a powerful ecosystem of complementary technologies.

Innovation-Driven

More than 90 active patents and continuous investment in next-generation technologies.

Railway Expertise

Proven experience in signalling, train detection, power distribution, monitoring, predictive maintenance, and railway control systems.

Long-Term Partnership

Financial strength, manufacturing capacity, and worldwide support capabilities ensure sustainable customer relationships.

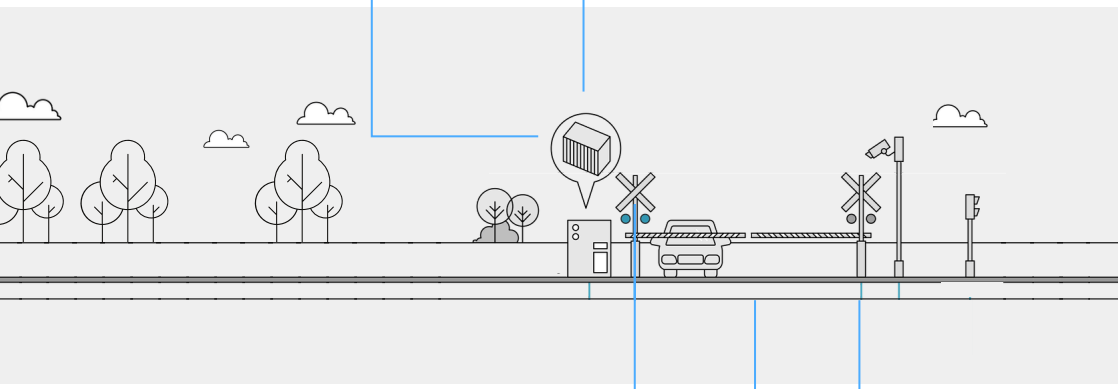
One Ecosystem

The combined expertise of CE+T Power, JEMA, RIPEnergy, CE+T America, and Alpha Innovations enables the delivery of complete solutions from energy conversion to advanced monitoring and control.

Solutions for trackside critical power

Predictive maintenance

Identify early signs of failure in your critical systems thanks to our advanced COMPAS and MESH software tools , ensuring maximum uptime, reliability and cost optimization.



Railway infrastructure signalling

From development to assembly and testing, we ensure the reliability of your railway Point Machine and Track Circuit modules, tailored to your infrastructure needs.

Power and Control cabinets

Designed to meet your specifications, our complete power and control cabinets ensure reliable and efficient operation.



Embedded power modules

Engineered for embedded environments, our sine wave inverters and DC/DC converters deliver stable, efficient power where it matters most.

From data collection to predictive maintenance

Railway infrastructures generate vast amounts of operational data every day. The challenge lies in transforming that data into actionable insights.
Alpha Innovations delivers advanced monitoring platforms that help operators gain complete visibility over their critical assets and improve decision-making processes in real time.



Our solutions enable customers to :

- Centralize information from multiple critical systems
- Monitor infrastructure performance continuously
- Detect anomalies before failures occur
- Optimize maintenance planning
- Increase overall network availability
- Reduce operational costs

Intelligent monitoring at the edge

Our edge solutions are designed to operate in demanding railway environments and provide real-time access to critical operational information.

MODULAR | SCALABLE | BIDIRECTIONAL | REAL-TIME

MCU Oled



- 1U fits in 19" rack
- CAN, Ethernet, USB host & device extension

UCC



- 1U , 19" rack form factor
- CAN - RS485/232 - USB-A/B + ADIO cards

GALEO



- DIN Rail form factor
- Based on a Raspberry PI
- Standard connectivity

Send the Right team at the Right place at the Right time

Railway operators often face a recurring challenge: when an issue occurs on a point machine or signalling asset, identifying the root cause can require multiple site visits, lengthy troubleshooting, and the mobilization of maintenance teams across the network.
This reactive approach leads to unnecessary interventions, lost time, increased maintenance costs, and reduced infrastructure availability.

Smarter Maintenance Starts with Better Insights

The **UCC SP200** is more than a monitoring device. It acts as an intelligent edge controller capable of continuously analyzing railway equipment behavior and detecting anomalies before they impact operations.

MEASURE | COMPARE | DETECT | INTERVENE



Traditional maintenance often relies on periodic inspections or troubleshooting once a fault occurs. The **UCC SP200** changes this approach by continuously acquiring and analyzing field data from critical railway assets such as point machines, track circuits, and signalling infrastructure. It can capture and process electrical signals at high speed, identify specific waveforms and patterns, and detect deviations from normal equipment behavior.

Reduce Maintenance Effort

Maintenance teams no longer need to inspect multiple assets to locate a potential issue. The system pinpoints the equipment requiring attention.

Eliminate Unnecessary Interventions

By identifying abnormal operating patterns remotely, maintenance can be scheduled only where it is truly needed.

Save Time and Resources

Technicians arrive on site with a clear understanding of the problem, reducing troubleshooting and diagnostic time.

Improve Network Availability

Potential failures are detected before they impact operations, helping operators maintain a safe and reliable railway service.

Integrated Power & Control Solutions

Integrating complexity. Delivering reliability.

Our engineering teams design and manufacture customized power and control cabinets tailored to the specific operational requirements of railway projects worldwide.
Engineered for railway signalling, telecommunications, station equipment, and critical infrastructure, our cabinets are built to ensure maximum availability, safety, and performance.

Proven railway integration expertise

Our cabinets combine power conversion, AC/DC distribution, battery backup systems, signalling interfaces, communication gateways, monitoring devices, and control systems within a single robust platform. They are engineered to power, supervise, and control critical assets such as track circuits, interlocking systems, switchgear, Platform Screen Doors, and railway signalling infrastructure.
Each solution is custom-designed, assembled, and tested in Belgium to ensure seamless integration, maximum availability, and long-term reliability in demanding railway environments.

- Power conversion & backup power
- Protection & energy distribution
- Signalling and train detection interfaces
- Switchgear and interlocking control
- Integrated monitoring and diagnostics
- Third-party equipment integration

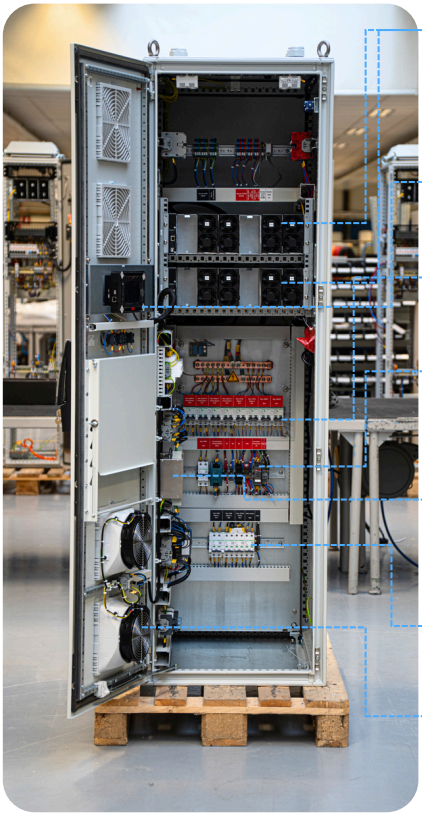
Rail integration project

Power cabinet 110Vdc

We designed reliable power and supervision solutions to keep Platform Screen Doors (PSD) running 24/7. Our solution ensures :

- Continuous power availability
- Robust supervision system

This cabinet supplies power to the PSD as well as a control cabinet.



Rectifier 3kW 110V (4kWpk)
Smart power conversion system featuring dual AC inputs and a single DC output — delivering seamless and reliable power balancing

Monitoring and Control
Monitoring display 7" with LCD touch screen

DC distribution
DC load power management and monitoring

Earth Fault Detection
Insulation monitoring between earth and DC to ensure safety and reliability

EMC filter
Ensure interference-free, standards-compliant power for reliable system performance

AC distribution
AC load power management and monitoring

Cooling system
Temperature control for optimal equipment performance and longevity

Railway signalling expertise

Ensuring safe and reliable train detection

Working alongside **Infrabel** and **Alstom**, Alpha Innovations designs and manufactures the **JADE** track circuits, a component that has become essential to the safety and punctuality of the Belgian rail network.
Installed throughout the railway network, JADE units continuously monitor track occupancy and provide essential information for traffic control operations. The latest generation of systems also incorporates advanced diagnostic and monitoring capabilities that support predictive maintenance strategies.

✓ 10.000
Jade 3 units deployed over 10 years

✓ 30 years
certified lifecycle, no planned obsolescence

✓ 91.7%
national punctuality rate (2025)



Three pillars of a reliable network

- **Extreme engineering**

Jade systems run flawlessly from -25°C to +70°C. Where standard solutions fail, Alpha Innovations guarantees service continuity, whatever the climate conditions.

- **Sustainability economics (OPEX)**

With a certified 30-year lifecycle, our equipment eliminates planned obsolescence and delivers unmatched long-term profitability for the national network.

- **Predictive maintenance**

These smart units locate trains in real time and anticipate failures, shifting maintenance from a reactive approach to a proactive strategy.

Other Use Cases



Customer : Siemens Mobility
Application : VAL automated people mover
Country : Italy, France, Korea
Expertise : Repartition cabinets & modules

TRACKSIDE SIGNALLING



Customer : Mobility (Vinci Group)
Application : Metro signalling management
Country : France, Belgium
Expertise : Power & control cabinets

TRACKSIDE SIGNALLING



Customer : Alstom
Application : Maintain optimal temperature for electrical components
Country : Norway
Expertise : Embedded inverter module DCDC

EMBEDDED POWER MODULES



Customer : Faiveley transport / Wabtec / Gilgen / Portalp
Application : Platform screen doors
Country : Worldwide
Expertise : DC power and control cabinets

POWER & CONTROL CABINETS



Customer : Hitachi Rails
Application : Metro signalling management
Country : Belgium
Expertise : Repartition and NS1 cabinets

TRACKSIDE SIGNALLING



Customer : Alstom
Application : Trackside Functional Modules
Country : Belgium
Expertise : Converter modules

TRACKSIDE SIGNALLING



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