



Traction systems for light rail vehicles

Selected reference projects
Compact Converter BORDLINE® CC400

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Dopravní podnik ostrava

Operators worldwide rely on ABB's converter technology



Powering mobility with ABB

- Highly flexible and reliable product platform to realize your project vision
- Any feature your project requires
- Competent local service and support wherever your project is



TRANSPORTS PUBLICS GENEVOIS | GENEVA, SWITZERLAND

Traction solution with onboard energy storage system

Compact Converter BORDLINE® CC400

Customer need

- Compact and light-weight design
- Expandable braking energy storage system
- (Short distance) catenary-free operation

ABB solution

- All in one box (two motor inverter, auxiliary converter, battery charger, super capacitor chopper and control)
- On-board energy storage
- Liquid-cooled solution
- Configurable with standard modules, 'plug & play' approach
- Best efficiency control involving motor noise suppression algorithm



Customer benefits

- Large installed base across a variety of vehicle concepts (e.g. under-floor mounting, roof mounting)
- Highly energy-efficient
- Service-friendly
- Easy and fast maintenance

Light rail vehicle
Photo: Stadler

STUTTGARTER STRASSENBAHNEN | STUTTGART, GERMANY

Air-cooled traction converter solution

Compact Converter BORDLINE® CC400

Customer need

- Powerful under-floor converter for demanding track profile
- Air-cooled, under-floor converter solution
- Quick and easy access to modules

ABB solution

- Very compact design, high integration
- Ultra-low noise operation mode due to highly optimized air-flow
- Modular and versatile, 'plug & play' approach
- Standardized power modules
- All connections through plug-in connectors



Customer benefits

- Highly tailored solution according to operators' requirements
- Ultra-low noise operation mode
- Service-friendly
- Easy and fast maintenance

Light rail vehicle
Photo: Stadler

SEATTLE DEPARTMENT OF TRANSPORTATION | SEATTLE, US

Tailored propulsion enabling catenary-free operation

Compact Converter BORDLINE® CC400

Customer need

- State-of-the-art propulsion enabling catenary-free operation

ABB solution

- Tailored propulsion converter with integrated traction battery charger, auxiliary converters, cooling unit and braking resistors
- Train Control Monitoring System (TCMS)



Customer benefits

- Customized solution based on well-proven standard building blocks
- Minimized space consumption on the vehicle roof

PORT AUTHORITY OF NEW YORK AND NEW JERSEY | NEWARK, US

Upgrade of the traction chain

Compact Converter BORDLINE® CC400

Customer need

- Upgrading the existing propulsion based on DC motors with a state-of-the-art three-phase AC traction system
- Compact mechanical integration in the available space
- Compatibility with three-phase 600 V AC input supply

ABB solution

- Standard modules and components (retro-) fitted into old system cabinet
- Very compact rack including low voltage distribution and power module



Customer benefits

- Optimized adhesion control results in less tire wear and smooth propulsion for second half of life-time
- Optimized life-cycle cost

CHANGCHUN RAILWAY TRAFFIC GROUP | CHANGCHUN, CHINA

Local engineering and production for chinese rail vehicle market

Compact Converter BORDLINE® CC400

Customer need

- Very short delivery and commissioning time
- Field-proven technology

ABB solution

- Cutting-edge water cooled technology for emerging Chinese light rail vehicle market
- Most compact and light propulsion solution with integrated auxiliary converter and battery charger
- Embedded self-cleaning mode reduces maintenance and cleaning of heat exchanger



Customer benefits

- Versatile and flexible product platform fitting a broad range of vehicle designs
- Unrivalled power density by means of water cooling
- All power electronic components needed for a light rail vehicle integrated in one device with one interface

SOUTH YORKSHIRE PASSENGER TRANSPORT EXECUTIVE | SHEFFIELD, UK

Dual-voltage traction solution

Compact Converter BORDLINE® CC400

Customer need

- Multi-system operation (750 V DC and 25 kV AC)
- Fulfil overhead line harmonic requirement
- Lightweight and compact roof mounted solution

ABB solution

- Highly integrated solution with synchronized auxiliary converter and battery charger
- Based on well proven BORDLINE® CC400 converter family
- Liquid-cooled solution
- Highly integrated solution with auxiliary converter and battery charger
- Field-proven state-of-the-art power electronic building blocks



Customer benefits

- Service-friendly, high availability of spare parts
- Modern and predictive diagnostics for easy maintenance

DALLAS AREA RAPID TRANSIT | DALLAS, US

Traction solution with onboard energy storage system

Compact Converter BORDLINE® CC400

Customer need

- State-of-the-art propulsion enabling catenary-free operation

ABB solution

- Tailored propulsion converter with integrated traction battery charger, auxiliary converter and battery charger for onboard battery
- Heat exchanger with integrated braking resistors



Customer benefits

- Customized solution based on well-proven standard building blocks
- Minimized space consumption on the vehicle roof

MARYLAND TRANSIT ADMINISTRATION | MARYLAND, USA

Upgrade from GTO to IGBT technology

Compact Converter BORDLINE® CC400

Customer need

- Form, Fit and Function; upgrade of the traction converter from GTO to IGBT power semiconductors
- Complete upgrade of the TCMS (Train Control and Management System)
- No replacement of the traction motors

ABB solution

- Forced air-cooled traction converter tailored according to operators' requirements



Customer benefits

- Higher reliability
- Lower total cost of ownership

Light rail vehicle
Photo: Andrew Horne

EMTU/STM | SANTOS, BRAZIL

Energy storage system enabling catenary-free operation

Compact Converter BORDLINE® CC400

Customer need

- Compact and light-weight design
- Catenary-free operation

ABB solution

- Compact Converter comprising motor inverter, auxiliary converter, battery charger, energy storage management and control)
- Liquid-cooled solution
- Configurable with standard modules, 'plug & play' approach
- Excellent control with energy storage management
- Battery-driven or super-cap-driven operation



Customer benefits

- Service-friendly, high availability of spare parts
- On-board energy storage and high energy-efficiency
- Large installed base on a variety of vehicle concepts (e.g. under-floor, roof and machine room mounting)

Light rail vehicle
Photo: Stadler

DOPRAVNÍ PODNIK OSTRAVA | OSTRAVA, CZECH REPUBLIC

New air-cooled traction converter platform

Compact Converter BORDLINE® CC400

Customer need

- Customized traction converter to fit vehicle design
- Compact and light-weight design

ABB solution

- Compact solution for traction only and traction converter with integrated auxiliary converter
- Air-cooled and roof mounted converters
- Highly integrated, powerful and modular design



Customer benefits

- High reliability
- Service-friendly
- Modern and predictive diagnostics for easy maintenance

Light rail vehicle
Photo: Stadler



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