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## **ENVILINE™ ERS**

Energy Recuperation System  
for DC rail transportation



# ENVILINE ERS – Energy Recuperation System

Reduce energy costs by returning the braking energy to the AC network

Transportation is energy intensive and it is not surprising that electric rail transit operators are amongst the largest consumers of electricity in their urban territory. To increase sustainability, these operators can no longer consider energy as just a cost of operation and need to look for ways to reduce their consumption.

Fortunately, mass urban transit systems offer an immediate opportunity, the recycling of the braking energy. When trains brake, their kinetic energy is converted into electricity and returned on the traction power line. Most of the time, on-board loads and distant trains can only take a portion of this energy, and the surplus is wasted into resistors.

ENVILINE ERS is a wayside energy recuperation system, which returns the surplus braking energy back to the AC network, reducing the total energy consumption of a rail transportation system by up to 30 percent\*.

## Start saving money instead of burning it

Train braking lasts only seconds yet generates extremely large currents and occurs hundreds and thousands of times each day. These events can cause voltage fluctuations that can lead to performance problems. The innovative ENVILINE ERS is a wayside Energy Recuperation System (AC connected) that saves the surplus braking energy by returning it back to the AC network. The ERS can be configured to provide rectification boost (bidirectional operation of ERS) and reactive power mitigation when not recovering the energy.

\*The level of savings will depend on the operating conditions of the train system. ABB can assist in determining the expected level of energy savings for specify scenarios.

## Key benefits

- Lowers energy costs through energy recuperation
- Lowest upfront and maintenance costs
- Smallest footprint, easy installation, low maintenance
- Elimination of on-board resistors
- Moving the heat out of the tunnel
- Compatible with new and existing systems.

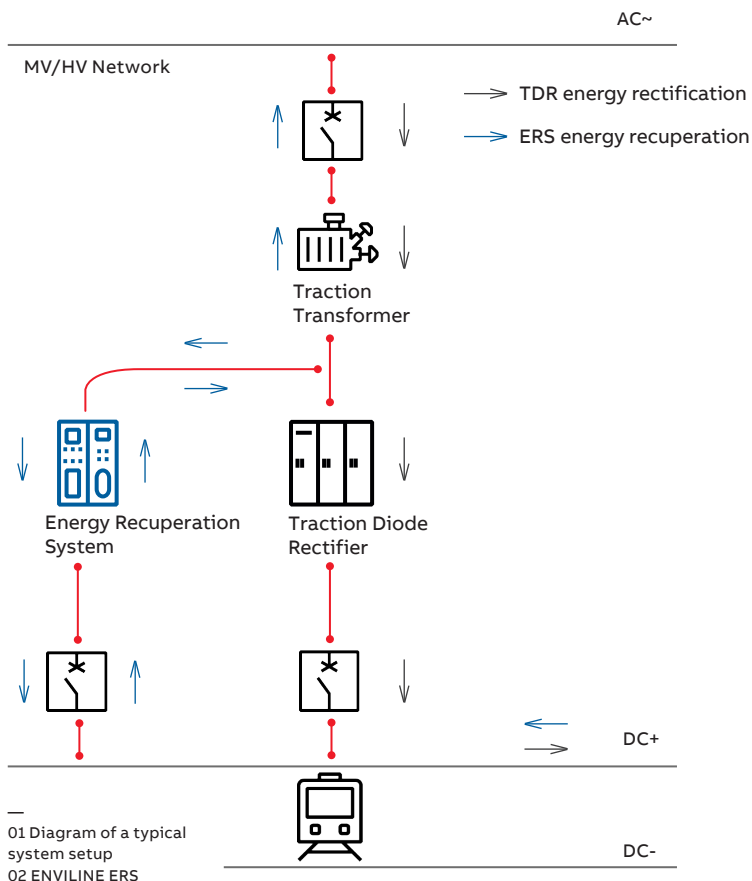
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## Key features

- Operates on 600, 750 and 1500 V
- Modular architecture allowing scalability of the system according to customer needs
- Low maintenance and long operating lifetime (over 25 years)
- Proven technology
- High overload capability
- Low harmonics content (TDD < 5%)
- Possible rectification boost (bidirectional operation of ERS)
- Easy integration with existing supply system
- Complete internal protection including E-STOP function
- Remote access
- Energy metering, operational dashboards and downloadable data files

## ENVILINE

Reliability and efficiency on track



### Opportunities beyond energy efficiency

Recycling the braking energy is the single largest opportunity to improve the energy efficiency of rail transportation systems.

In addition to providing higher energy efficiency, the ERS can also provide rectification boost (bidirectional operation of ERS) and reactive power mitigation when not recovering the energy.

Technical data	ENVILINE ERS 750	ENVILINE ERS 1500
Nominal TPS (Traction Power Supply)	600 / 750 V <sub>DC</sub>	1500 V <sub>DC</sub>
Converter power range	0.5 to 1 MW	1 to 2 MW
Overload capability	up to 225%	up to 225%
Operating voltage range	500 to 1000 V <sub>DC</sub>	1000 to 2000 V <sub>DC</sub>
Efficiency	97.5 %	97.5 %
Cabinet dimensions (W x H x D)	2.0 x 2.2 x 1.0 m (width depends on configuration)	2.2 x 2.2 x 1.4 m (width depends on configuration)
Maximum system dimension	3.0 x 2.2 x 1.0 m	3.4 x 2.2 x 1.4 m
Weight	2000 kg (basic configuration)	2750 kg (basic configuration)
Storage temperature	-20° to 60°C	-20° to 60°C
Operating temperature	0° to 40°C, no derating	0° to 40°C, no derating
Maximum temperature (with derating)	50°C	50°C
Elevation	1000 m	1000 m
Enclosure	P21 / IP32 (option)	P21 / IP32 (option)
Remote access	CAN / IEC61850 / MODBUS TCP/IP	CAN / IEC61850 / MODBUS TCP/IP
SCADA output	6 input contacts, 6 output contacts (basic)	6 input contacts, 6 output contacts (basic)
THD at nominal power	<5%	<5%
EMC	EN 50121-5	EN 50121-5
Standards	EN 60146-1 / EN 50328	EN 60146-1 / EN 50328

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