

## Static converters - essential equipment of modern railway infrastructure.

The modern railway, and especially its entire infrastructure, is powered by electricity. Railway infrastructure equipment must have power supplied to individual circuits in such a way that electrically powered railway equipment can operate without interruption. The risk of failure resulting in a long-term power outage is relatively high and is a real threat in any power system.

In order for electricity with appropriate parameters to reach all installed receivers continuously and uninterruptedly, it is necessary to use an emergency power supply based on static converters dedicated for this purpose. The railway system power supply converters produced by ENIKA are devices that not only adjust the current and voltage parameters to the values required by the receivers, but also guarantee the safety of the entire system, which they protect to some extent against the effects of power surges and short circuits.



In order to ensure the continuity of railway infrastructure equipment, ENIKA offers the static converter type ENI-PSZ3000-26/AC-DC, which is dedicated to powering trackside devices.

The ENI-PSZ3000-26/AC-DC converter has a steel structure suitable for installation in a separate electrical switchgear or in a dedicated container located in the trackside space. All of the electrical and electrical power equipment of the converter is installed in a mechanically resistant equipment cabinet.

The converter is supplied with energy from the railway contact system and converts the 3 kV DC voltage to 3x400 V alternating sinusoidal voltage. With the converter, it is possible to use the railway contact system as an emergency power source to supply devices with three-phase input voltage of 3x400 VAC/50 Hz or single-phase input voltage of 230 VAC/50 Hz, in the case of a primary power failure due to e.g. power grid failure.

Voltage from the HV input terminals is supplied to an input filter consisting of a diode, choke and capacitor. The filtered voltage is subsequently supplied to the HV inverter and then to the primary winding of the power supply transformer. The converter control system ensures AC output voltage stability independently of any HV power supply variations or load resistance values at the AC output, and make the device immune to the effects of overloads or shorting that may occur in the powered circuit. Diagnostic systems maintain the efficiency and operational readiness of particular units, and in the event of malfunctions regarding any of the sub-assemblies, operation of the entire device is discontinued.

One of our clients which uses our converters is APIS, a company responsible for electrical power equipment and automatics in the process of reconstruction and modernisation of railway infrastructure executed by Gawmar - a general contractor from Częstochowa. The converters are one

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of the elements of the guaranteed voltage system implemented by APIS. Ensuring continuity of power supply to all devices constituting the railway infrastructure is a key element of the railway safety system. It minimises or completely excludes the risks associated with sudden failure and power failure, and thus also minimises the technical and economic impact.

For nearly 30 years, ENIKA has been designing, manufacturing and supplying electrical power equipment for the railway industry. Their recipients include companies that produce and modernise rolling stock, direct users of vehicles, as well as companies involved in the construction and modernisation of infrastructure. Our ISO 9001:2015 and ISO/TS 22163:2017 certifications allow us to offer equipment of the highest quality and reliability.

Materials and photos: Enika Sp. z o.o.