

## Main traction transformer for electric multiple unit



Structural design of the low-floor electric multiple unit has set strong mechanical limitations on the construction of the main transformer for EMU. Maximum dimensions of the transformer are defined with the default dimensions of the train. Weight restrictions and roof mounting have set mechanical constraints on the construction. All these requirements can only be met with a special transformer construction. Dimensions and weight limitations were met by using high temperature class insulation materials. In this design there are multiple low voltage terminals for the various functions of the transformer,

which supplies not only the motors but also the auxiliary systems.

In this project, because of the specific use of the transformer, aside from different technological factors, the impact on people and the environment was a factor of great importance.

This transformer has remarkable environmental safety characteristics - low losses, low values of outer magnetic field, filled with biodegradable and nonhazardous synthetic oil specifically developed for use in transformers with low flammability requirements. Stated transformer characteristics are confirmed with routine, type and various special tests.

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## Transformer

<b>WINDING</b>	<b>Rated power (kVA)</b>	<b>Rated voltage (V)</b>	<b>Rated current (A)</b>
HV	1510	25000	60.4
Traction	4 x 275	4 x 800	4 x 344
Filter	160	1000	160
Heating	100	400	250
Auxiliary	150	340	441

### Basic characteristics

- power supply from the railway network 25 kV / 50 Hz
- impedance voltage HV/LV up to 38 %
- low losses
- optimized weight and dimensions of the transformer
- roof-mounted transformer
- built-in equipment made of materials suitable for mounting on traction transformer
- high temperature class insulation materials used (thermal class F)
- two resonant circuit reactors integrated in the main transformer tank
- transformer filled with MIDEL 7131, biodegradable and non-hazardous synthetic oil specifically developed for use in transformers with low flammability requirements
- compliance with standards IEC 60310, IEC 60076 and IEC 61373 confirmed by routine, type and a number of special tests

### Reactors

Frequency (Hz)	Rated current (A)	Max. current (A)	Rated inductance (mH)
100	272	470	2x0.5

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