

Effilight traction transformers

Next generation of traction transformer for rail applications



ABB's Effilight® traction transformer enables new opportunities in rail vehicle design. Based on an innovative approach to mechanical integration, this major advancement of a proven technology offers unprecedented energy efficiency and lightweight transformers.

Key features

- Innovative approach to mechanical integration by keeping oil exactly where needed around the windings
- Flexibility in design saves weight and improves energy efficiency in comparison to standard solution
- Unique and patented design
- Suitable for roof, machine room and underframe installation
- Available for 15 kV and 25 kV
- Available in steel or aluminum tank
- Appropriate for retrofit and new train platform
- Air natural cooling enabler (ODAN)
- Modular concept

Customer benefits and savings

- Proven lifetime using oil for insulation
- Maximum weight or energy savings, or any intermediate solution tailored to customer needs
- Reuse of the same active part for different mounting positions
- Life cycle costs reduction
- Less maintenance
- Reduction of cooling unit size and power
- Reduction of auxiliary consumption
- Lower environmental impact as well as acoustic noise level

- Reduced infrastructure wear-off
- Improved train design flexibility
- Best-in-class technology for traction systems

ABB as your competitive edge

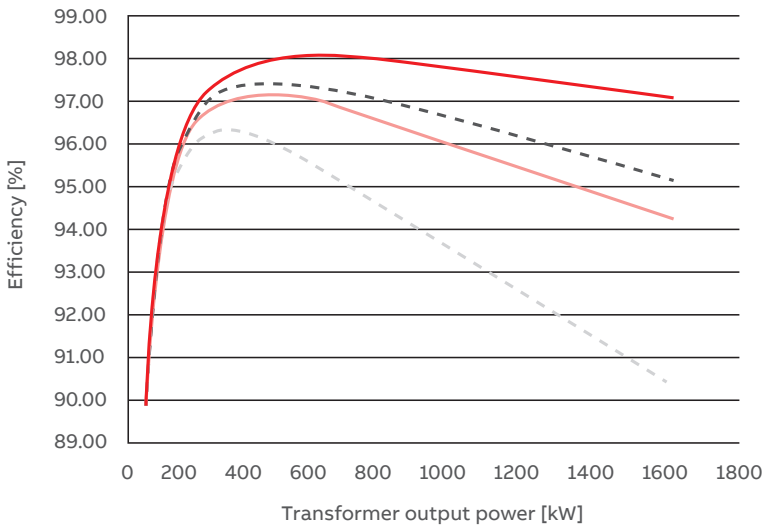
- More than 100 years of expertise in traction transformers
- Worldwide leader in traction traction transformers
- Estimated installed base of 40'000 units worldwide
- Global supplier with global footprint
- Proven track record with many references worldwide
- Dedicated team of rail professionals
- Unrivalled level of engineering support and after-sales service

Average weight savings (Up to)

Power	15 kV/16.7 Hz	25 kV/50 Hz
1,0 MVA	- 20 %	
2,0 MVA	- 10 to - 15 %	- 20 %
3,0 MVA	- 10 %	- 15 %
4,0 MVA		- 10 %

Average loss reduction (Up to)

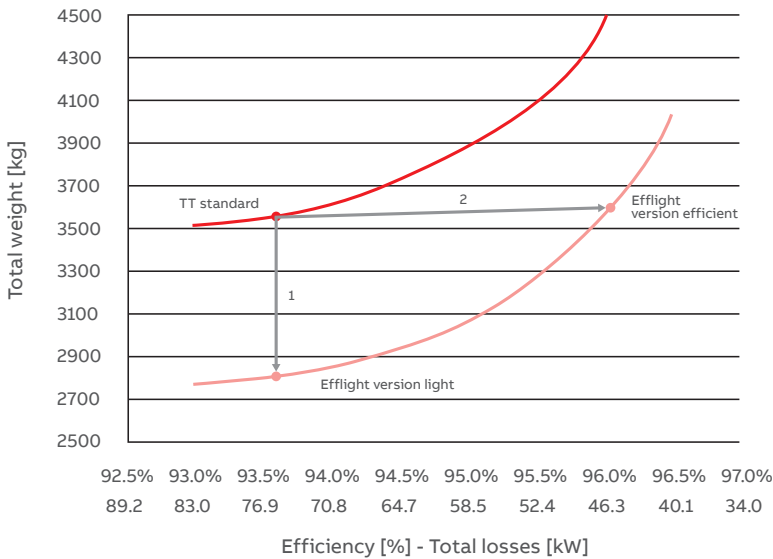
Power	15 kV/16.7 Hz	25 kV/50 Hz
1,0 MVA	+ 50 %	
2,0 MVA	+ 20 to + 30 %	+ 50 %
3,0 MVA	+ 20 %	+ 20 to + 40 %
4,0 MVA		+ 20 %



Roof mounted 1.1MVA 15kV 16.7Hz / 25kV 50Hz traction transformer

- Classical 15kV
- Classical 25kV
- Effilight 15kV
- Effilight 25kV

Comparison of transformer efficiency as function of the output power. In the case of bi-system traction transformers too, Effilight offers a significant improvement in terms of efficiency compared to the classical technology.



Roof mounted 1.1MVA 15kV 16.7Hz traction transformer - Typical efficiency vs. weight curve

- Efficiency to weight curve relationship for classic transformer
- Efficiency to weight curve relationship for Effilight

Increasing efficiency always requires increasing weight. Since Effilight offers a significant reduction of weight at equal efficiency, it is possible to get drastically improved efficiency compared to the classical technology at the same weight.

- 1) Benefit of Effilight in weight reduction
- 2) Reinvested benefit of Effilight in losses reduction