

Tractronic® Thinity: compact infinity

Maximize train efficiency with
minimized transformer size

Urbanization and constantly increasing passenger traffic impose new requirements on train operators. It is crucial to increase their capacities and at the same time reduce operational cost. While energy efficiency and profitability are key drivers for a prospering business, flexibility and reliability remain indispensable for safe and smooth operation.

Siemens Transformers now offers a new Tractronic® traction transformer line called Tractronic® Thinity™, that meets all of these demands. The newly developed transformer is convincing with its unique infinity design that immediately demonstrates its lightweight. The total transformer weight can thus be reduced by approximately 25%. This means less energy consumption, increased train efficiency, and maximum power-to-weight ratio.

First project already in the works

The first reference project for Deutsche Bahn is already being built. The new transformer type will enable our customer to combine maximum efficiency and flexibility with minimal life cycle costs in its new regional train called Mireo®. The components are mostly installed underfloor or on the rooftop to create more space, while different configurations of the train are available. Intelligent recording of maintenance-related data reduces life cycle and maintenance costs and increases safety and availability.

Siemens Tractronic® Thinity™ – because we know the mobility business

Being a trusted partner of mobility companies all over the world, Siemens Transformers was able to develop a product that fits all the needs of the industry without making any compromises. Tractronic® Thinity™ is just as robust and dependable as all our other Tractronic® products. It can even be mounted on the rooftop or underfloor – giving train operators all the freedom needed for a safe, reliable, and flexible train operation.

Siemens Transformers has a factory network of five traction transformer plants in Germany, Russia, India, the US, and China that all rely on the same high quality standards. Our expertise of more than 100 years of traction transformer manufacturing is outstanding, just as their mean-time-between-failure (MTBF) rates.

Explore the superior quality and exceptionally innovative concept of Tractronic® Thinity™.



The new Tractronic® Thinity™ combines maximized train efficiency with minimized transformer size.

Tank design

The first and most important development when it comes to a new generation of traction transformers is reducing weight. This enables train operators to increase efficiency of their train operation, save space, or install equipment that is beneficial to the passengers, such as onboard entertainment.

When reducing space inside the transformer, in our eyes it is logical to follow the active part's shape to further reduce weight and material – and to show these benefits right away.

With Tractronic® Thinity™ we were able to minimize the transformers' weight and size – thereby adding immediately visible value values that are visible right thanks to the innovative infinity design of the logically shaped tank.

Robustness / installation situation

Traction transformers are exposed to the hardest conditions. Acceleration, braking, and all weather and temperature conditions imaginable must not harm a traction transformer. When installing a traction transformer underfloor stone chips add to the necessity of hardening the units.

As a partner of the rolling stock industry, we are aware of all of these conditions and still want to provide full flexibility also regarding the installation situation. Tractronic® Thinity™ can be mounted on rooftops as well as underfloor without compromising on reliability and efficiency.

Innovative insulation

Newly developed insulation material is the key to making our main component, the active part, as compact as possible. This not only saves weight but also precious copper, and hence has a direct influence on the overall performance of the transformer.

New cooling concept

Cooling the Tractronic® Thinity™ is optimized by using CFX oil flow simulation. Using this advanced engineering tool, we have been able to cut down the oil volume to an absolute minimum. This not only saves on weight, but fire safety can also be improved.

Remain flexible: adaptable for other train types

The Tractronic® Thinity™ was developed in close collaboration with a train manufacturer as well as a train operator. The first units will be installed on electrical multiple units (EMU). The Mireo® trains are typical commuter trains that impose the most challenging requirements on train operators, who have to secure reliable and smooth mass transit to commuters in urban areas.

However, the concept is also applicable for high-speed trains and electric locomotives. We will happily assist you in facing your challenges and delivering the right Tractronic® Thinity™ especially for your railway application!

Advantages at a glance

- **Tank design** saving up to 25% of transformer weight
- **Flexible positioning:** rooftop as well as underfloor installation possible
- **Innovative insulation**
- **New cooling concept**
- **Minimalist tank shape**
- **Adaptable for different types of trains**



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