Simply Performs Better.
EmTrac – Electro-Mechanical Traction Systems
System Competence for Highest Demands

Perfectly adapted systems make everyday rail vehicle operations more reliable, safe and efficient. Voith has the system competence for complete electro-mechanical traction systems: from high-voltage equipment, transformers, synchronous generators, traction converters, control technology and motor-gear units to complete wheelsets including bearings.

**EmTrac: Makes Electric Traction Systems More Economical**

The heart of EmTrac are the EmCon traction converters with a power range of 185–1200kW. Together with other Voith components, such as motor-gear unit (EmDrive), wheelset (EmSet), vehicle control (EmSys) as well as the HV equipment transformer and synchronous generator, they form the electro-mechanical traction system.

This electro-mechanical system competence allows Voith to implement a technically and economically optimized traction system that is also service-friendly.

The System Competence Includes

**Simulation:**
The entire vehicle, the track data and all components of the electro-mechanical traction system are simulated in computer models. This allows to select a drive concept being best suited to meet the customer’s requirements, and to adjust the components of the electro-mechanical traction system optimally to the vehicle.

**EMV:**
Suitable control algorithms ensure line-friendly operation and adherence to all relevant limit values.

**RAMS:**
RAM calculations provide dependable data on reliability, availability and maintenance costs. On the basis of this data, the electro-mechanical traction system is further optimized. The safety of the system is verified by safety analyses.

**LCC:**
Calculation of energy and maintenance costs in addition to the investment costs. Cost minimization by selection of suitable components and measures.

**Noise:**
Sound prognoses combined with ensuing measures allow reduced noise emissions.

**Energy:**
Assessment and implementation of energy-saving measures, such as optimal energy recuperation, energy-optimized driving and energy storage systems.

**Mass:**
The mass management ensures that the weight, the center of gravity and the weight distribution of the electro-mechanical traction system are monitored continuously.

**Verification/Validation/Approval:**
The interactions of all relevant components are verified as part of the drive system test under consideration of realistic operating profiles. Voith offers support with the validation and the approval of the complete vehicle.
**EmTrac: For all Power Classes**

Voith offers electro-mechanical traction systems for DC and AC vehicles, as well as for diesel-electric vehicles. Apart from supplying complete systems for new vehicles, we also offer tailor-made solutions for modernizations and repowering projects.

- Systems from 185 – 600 kW for voltages of 600 – 750 V\textsubscript{DC} for LRV
- Systems from 300 – 1,800 kW for voltages of 750 V\textsubscript{DC} / 1,5 kV\textsubscript{DC} for DEMU and Metro
- Systems from 600 – 4,800 kW for voltages of 1,5 kV\textsubscript{DC} / 15 kV\textsubscript{AC} / 25 kV\textsubscript{AC} for EMU and Locomotives

**EmTrac combines all relevant components**

for electro-mechanical traction systems

---

As a specialist for drive technologies Voith offers all components for electro-mechanical traction systems (EmTrac) – for new vehicles and also for modernizations and repowering projects.