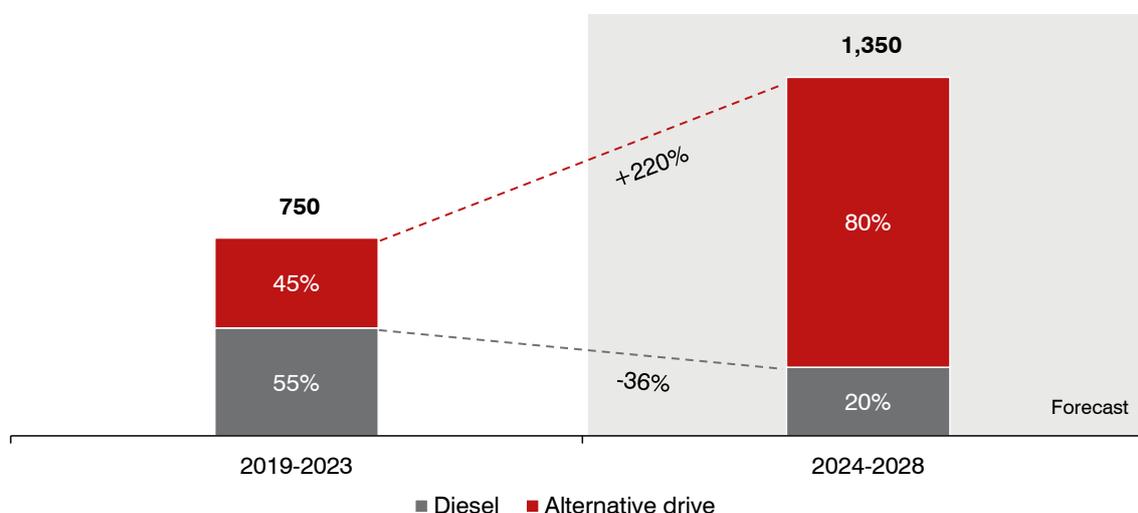


Initial optimism about a green locomotive fleet in Europe is giving way to the realisation that the transformation will be both slow and expensive

China and India show how rapidly decarbonisation can proceed in rail freight transport

[12th December 2023] Operators appreciate conventional diesel locomotives not only for their durability and reliability, but first and foremost for something that remains essential even in 2023: they are necessary for the rail transport system, especially in regions with numerous non-electrified secondary lines and shunting yards. Alternative-drive locomotives are increasingly available in the first country markets, yet they remain almost unaffordable for the vast majority of railway operators (which are under tremendous cost pressures in the rail freight transport sector) and frequently entail additional challenges. While there is a desire amongst players to effect the transformation, economic and operational concerns are frequently causing individual operators to hold back. Even so, SCI Verkehr believes that Europe, too, will experience strong growth in the medium term in what is still a small market for new locomotives able to operate independently of overhead lines. Asia’s large Chinese and Indian markets are taking a different path. Extensive investments in electrifying rail lines are making it possible to move away from diesel traction in the new vehicle market while simultaneously ensuring that the demand for alternative-drive locomotives remains limited. European countries have been reluctant to go this route on account of difficulties with planning law and high investment costs. In its new study “Diesel and alternative drive locomotives 2023 – Global Market Trends”, SCI Verkehr GmbH illustrates these and other developments.

Delivery of new diesel and alternative drive locomotives in Europe (number of locomotives)



Alternative drive locomotives are assets featuring a traction different from pure electric drive via a pantograph, and different from pure diesel traction.

© SCI Verkehr

In 2023, the global market for new, diesel-driven and alternative-drive locomotives was small, with a value of approximately €2.62 billion. For many years now, the market for new diesel locomotives has been under tremendous pressure for a variety of reasons. In countries with significant fleets like China (sharply increasing electrification of the network – no deliveries since 2019) and the USA (rail freight operators’ new operating concept allows for reductions in the fleet – recently the focus has been on modernising existing fleets), deliveries of new locomotives have collapsed.

Starting from its currently low level, however, SCI Verkehr is expecting a marked increase in the new vehicle business, to €3.97 billion in 2028. Many alternative drive locomotive types have emerged from the testing stage and are set to gain significant market shares. The regions experiencing the greatest

pressure to take action in reducing the emissions of their fleets are also the regions with the largest volumes of new vehicles: Europe and North America.

Europe is currently witnessing its last large deliveries of diesel locomotive fleets, and alternative drive locomotives are already driving the new vehicle business. It is primarily national railways and leasing firms that are making larger investments in alternative-drive locomotives. At the same time, the first high-performance battery locomotives are currently entering the market in the USA. In conjunction with diesel locomotives, these are intended to reduce emissions in rail freight transport. Overall, however, there is no discernible move away from diesel traction in rail freight transport in most of the world's market regions. In many regions with a low level of electrification like Australia/Pacific and Africa, rail freight operators are opting for diesel traction with modern (or more modern) technology. As a result of a worldwide electrification rate of just 33%, traction that is independent of overhead lines will continue to remain indispensable for rail freight transport in many regions in the long term.

Between 2019 and 2023, approximately 4,100 diesel locomotives and nearly 500 alternative-drive locomotives were delivered worldwide. The North American manufacturer Wabtec was the market leader with 28%, followed by the Russian firm TMH (27%). SCI Verkehr is currently observing high price levels in many regions, a development that is being driven by high inflation rates and stricter emissions standards.

The after-sales business is making a significant contribution to global emissions reductions in the diesel locomotive fleet. Engine retrofits or the installation of start-stop batteries or driver assistance systems, for example, can help make fleets more climate-friendly in an environment where operators are price sensitive, because alternative-drive locomotives currently make up less than 1% of the overall fleet. In spite of declining diesel locomotive fleet numbers worldwide, the after-sales business remains at a high level – and those alternative-drive systems currently entering the marketplace that continue to rely on a diesel engine as a second energy source (e.g. alongside a traction battery) will go on driving high maintenance expenditures until such time as diesel engines have been entirely replaced.

The market study “**MC Diesel and alternative drive locomotives 2023**” will be available in English from SCI Verkehr GmbH (www.sci.de/shop/) from December 2023. There is also an Excel file available for this study that provides a clear and transparent presentation of all the figures contained therein.

Your contact for the study is:

Kata Borbély
Head of Sales

Phone: +49 40 507 197 18

Mail: k.borbely@sci.de