Freight Cars
What is Knorr-Bremse’s complete “one-stop solution” for freight cars?
**Cutting-Edge Technologies**

<table>
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<tr>
<th>KE Control Valve</th>
<th>Kink-Curve Valve</th>
<th>Compact Freight Car Brake – CFCB</th>
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<td>Tried and tested, highly adaptable</td>
<td>Avoids wear and overload</td>
<td>Reducing weight and operating costs</td>
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First produced in 1954 and continuously improved ever since, the KE control valve is synonymous with safe, rapid, even, and controllable operation of the braking system. More than 1.5 million valves are currently in operation around the world. This proven platform can have many additional functions added to it. Its modular design combines the cost advantages of standardization with the flexibility of customized solutions.

The kink-curve valve is an additional valve for braking under load that is simply attached to the KE control valve. In freight trains consisting of cars with differing braking performance, it ensures even braking according to the load and braking requirements, and reduces wheel surface temperatures by up to 150°C. The valve comes into its own during long descents, when it effectively protects against excess wear and thermal overload.

The CFCB compact bogie tread brake could reduce the weight of freight cars by more than 1,000 kg, making them considerably more economical to operate. Braking force is transferred directly via simple slack adjusters, and the cylinder and transmission rod are fully insulated. All bearings are maintenance-free and the system automatically adjusts for block and wheel wear.

**Is it true that Knorr-Bremse’s freight car solutions are also the best in the world in terms of economy?**

Innovations that pay their way

Reducing wear and tear and maintenance costs is a good way of saving money. More than any other manufacturer, Knorr-Bremse has succeeded in finely coordinating the complex interplay of different braking systems. With the modular KE valve system a wide range of additional functions can be realized using a single, uniform platform. The CFCB compact bogie-mounted block brake reduces installation costs considerably for vehicle manufacturers and also significantly reduces the weight of a freight car by saving a number of bogie components. These examples demonstrate that if all the relevant factors are included in the calculation, quality emerges as the best solution.

Martina Havlik,
Team Leader,
Sales Freight Cars
“Goods need to be delivered on time, safely, and with minimum environmental impact.”
A perfect balance of high-quality systems and services

For decades, manufacturers and operators of freight cars all over the world have been opting for Knorr-Bremse braking systems. The company uses its expertise to develop new ways of enhancing the performance and economy of tried and tested, safe technologies. Top-quality components operate together smoothly to guarantee optimum functionality. Every project is designed so that parameters such as pressure settings, characteristic curves, and braking calculations are tailored precisely to the customer’s operating requirements. Modular concepts ensure that this flexibility comes with maximum economy.