



Train window lasering

Seamless connectivity any time, any place



DB Fahrzeuginstandhaltung GmbH | InnoTrans 2024

Combating weak mobile phone reception on trains



Every day, Deutsche Bahn connects millions of people who also want to be connected digitally. In an increasingly connected world, reliable mobile reception is essential both for work and leisure, including when travelling by train. The demand for digital applications is high and continues to rise.

Weak mobile phone reception thus represents a major challenge. This is especially true for existing vehicles, whose passenger compartments have window panes that are coated with a wafer-thin layer of metal to protect them from heat, but which also makes it difficult for mobile signals to penetrate.



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Window laser treatment for greater passenger satisfaction



To guarantee better reception, good mobile phone coverage is a must both on the track and on the train.

To make your multi-layer passenger compartment windows more permeable, we use a laser to precisely incorporate a fine mesh structure into the metal layer of the window pane. The intricate pattern allows mobile signals to enter the train's interior much better than before without impacting the integrity of the window pane. The thermal insulation properties and operational safety remain unaffected.

Our window laser treatment thus makes travelling by and working on the train much more attractive for your passengers.



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Train window lasering overview



Use cases



- Side windows in many existing fleets are coated with a metal layer to reduce solar radiation
- It is difficult for mobile phone signals to penetrate Faraday cages
- Repeaters (active technology) improve mobile phone reception, but have high operating costs



Functions



- The conductivity of the coating is interrupted by partial removal of the material using a laser
- RF pattern reduces attenuation to the level of clear glass panes
- New, laser-structured window panes already in use (RRX, ICE 3 neo)
- Mobile signals can enter the train's interior about 100 times better than before



Your advantages



- Better connectivity for passengers and greater travelling comfort
- No impact on the mechanical properties of the windows
- Windows can be machined as part of an overhaul or retrofitting project to reduce additional maintenance and operating costs and increase your vehicle availability