MULTIRAIL® WheelLoad – Measuring System for Wheel Vertical Forces

- **Suitable for new and maintained rail vehicles**
- **Calculation of wheel and wheelset vertical forces**
- **Flexible installation options including integration into lifting platforms**
- **Database-supported operating software**
- **Custom-made solutions available**

Application

The most uniform possible distribution of wheel forces within rail vehicles is an important characteristic for ensuring derailment protection, minimizing line loading and guaranteeing travelling comfort.

There is an increasing interest in the calculation and adjustment of wheel vertical forces by maintainers and manufacturers of rail vehicles.

These calculations and adjustments are particularly important if the vehicle body and bogie are separated during repairs or when a new body is placed onto a new bogie.

MULTIRAIL WheelLoad is a system for calculating the wheel and wheelset vertical forces acting on rail vehicles.

System Design

- Load cell with measuring rail
- DISOBOX® Measuring electronics
- Workstation
- Database-supported software
- Printer
- Optional integration into customer IT or ERP system
- Optional WLAN interface
- Optional mobile control cabinet

MULTIRAIL WheelLoad systems can be used in halls with pit tracks or elevated tracks, as well as in open air with pit tracks or slab tracks.
A MULTIRAIL WheelLoad can be implemented as a static or dynamic system.

Systems for determining static forces

The vehicle is either located with all of its wheels upon the system and all wheels are measured simultaneously or each individual bogie or wheelset is positioned above the system, and then incremented forward once the measurements have been taken.
The system determines the wheel vertical forces at the wheel contact point while stationary.

Picture showing a system for an entire vehicle, where each measuring rail can be adjusted along the z-axis to simulate a correction of wheel load distribution

Systems for determining dynamic forces

To determine the wheel and wheelset vertical forces the vehicle is moved across the system at low speed.

This ensures all dynamic influences such as twisting and friction of the vehicles and the increased demands on the track bed are taken into account. A large number of values are measured at a range of measuring points.

Measurement uncertainty can be verified with a confirmed reproducibility.

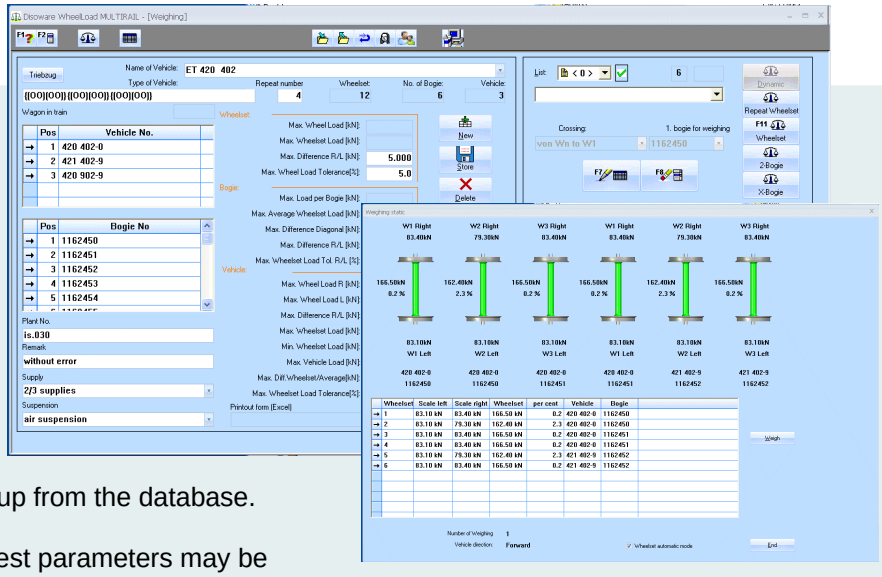
Systems for dynamic determination of wheel vertical forces are best utilised in conjunction with completely welded tracks.

System for determining dynamic wheel vertical forces

Installation conditions for all variants

Measuring track must conform at least to DIN 27202-10 or EN 15654-2
Alternatively: Integrated into lifting platforms

Operation and analysis



MULTIRAIL WheelLoad is operated using a PC with the Windows operating system. All relevant information on the vehicle is gathered, edited and stored in the operating program. The measuring electronics supply information on static or dynamic forces. Details on the vehicle type, direction of motion, bogies used and the test tolerances are entered by the operator or called up from the database.

A range of threshold values and test parameters may be entered. Absolute and relative wheel force and wheelset force differentials are automatically calculated and recorded in the printout along with the wheel and wheelset vertical forces. Data can be exported to an on-site computer system.
Procedures are logged as per DIN 27201-5.

Technical data

Conformance	DIN 27201-5 Testing of wheel and wheelset vertical forces of rail vehicles
	DIN 27202-10 Vehicle structure measurement, measuring track
	DIN 25043 Measurement of new railway vehicles
Prepared for	Pr EN 15654-2 Measurement of Wheel Forces & Axle Loads, New & Maintained Vehicles
	EN 14363 Measurement accuracy DIN 27201-5
Modes of operation	Static, dynamic or static and dynamic
Measurement range	typically 125 kN per wheel

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