

Focus on IFA's work

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Whole-body vibration on a pallet truck

Problem

Pallet trucks are vehicles employed for transporting loads within plants. Employees complained of pain in the spinal region following longer exposure to vibration on a new pallet truck on which the driver's seat was situated at 90° to the direction of travel.

Activities

The vibration emission characteristic declared by the manufacturer of the pallet truck was checked in accordance with the EU Machinery Directive on an artificial test track. The vibration exposure upon the driver during normal travel was also measured and determined in the form of the vibration attenuation characteristic of the seat transmission factor.

Results and Application

The results obtained on the test track correlated well with the vibration emission values declared by the manufacturer. The frequency-weighted vibration acceleration was 0.44 m/s^2 . At 0.33 m/s^2 , the vibration exposure during normal travel lay below the value measured on the test track. The seat transmission factor indicated a well adapted seat.

A questionnaire conducted amongst the drivers revealed that the problem lies in fact in the method by which the commercial vehicles are loaded.



Pallet truck with driver's seat at 90° to the direction of travel

Pallet trucks have relatively small wheels. The ramps over which they access the commercial vehicles differ in their angle of inclination according to the latter's level of loading. The ramps therefore had to be taken at a higher speed, which in turn imparted shock to the drivers. Suitable adjustment of the height of the access ramps was proposed as a solution.

Area of Application

All sectors of the economy with an industrial element, specifically: the wholesale trade, distribution depots, the metalworking industry, the electrical industry

Additional Information

- DIN EN 13059: Safety of industrial trucks – Test methods for measuring vibration (06.09). Beuth, Berlin 2009

Expert Assistance

IFA, Division 4: Ergonomics – Physical environmental factors

Literature Requests

IFA, Central Division