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Focus on IFA's work

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Safe narrow pathways in rack warehouses

Problem

Useable space is a substantial economic factor in large rack warehouses. The pathways between the racks are thus often kept as narrow as possible. If industrial trucks are used to access the racks, there is often only a minimal lateral space left between the truck with its load and the rack itself.

If the rack system is intended to be accessible to workers picking orders on foot, these are at risk whenever an industrial truck (such as a fork lift truck) approaches because the driver is concentrating on removing or replacing a certain load in the rack; the truck may be moving at speeds of up to 10km/h in such instances. According to the DGUV Vorschrift "Flurförderzeuge" ["Industrial trucks"], industrial trucks can be used when the safety distance is less than 0.5m on both sides only if constructive or technical fixtures prevent workers on foot from occupying the narrow pathways at the same time as when trucks are present.

This specified safety objective is described in closer detail by the relevant standard, DIN 15185-2. The possible technical protective measures include the systems installed at the entrances to the warehouse aisles as described here. They serve as automatic warning equipment by providing a visual alarm at the relevant entrance and an acoustic alarm within the storage area.

Stationary warning device for securing access to a narrow pathway in a high rack warehouse

Should a situation arise in which the warehouse aisle would be occupied simultaneously by persons and retrieval equipment, the persons concerned/at risk are warned before entering or driving into the aisle concerned.

Essential components of automatic warning equipment are:

- electro-sensitive protective equipment (ESPE), such as light beam devices at the entryways to the narrow pathways,
- recognition systems that can distinguish between industrial trucks and pedestrians.

Activities

In conjunction with the expert committee responsible at the time for handling and storage technology (now the DGUV Trade and logistics expert committee) and the IFA, design and test requirements for automatic warning systems were drawn up as early as 1996. These took the form of test principles (GS-FL-01) against which type testing was possible at the IFA.

Results and Application

Experience gained in the use of automatic warning equipment in warehouse rack systems shows them to be effective in improving the protection of persons in narrow aisles.

Since this system type serves solely to provide a warning and does not have a technical (i.e. braking) influence upon the retrieval equipment, it requires responsible behaviour on the part of all persons employed in the warehouse. This must be ensured by the provision of regular instruction.

Area of Application

Manufacturers of protective equipment and rack-accessing industrial trucks, warehouse proprietors, technical monitoring services

Additional Information

- Flurförderzeuge (DGUV Vorschrift 68, bisher: BGV D27, 01.97). Carl Heymanns, Köln 1997
- DIN 15185-2: Flurförderzeuge – Sicherheitsanforderungen – Teil 2: Einsatz in Schmalgängen (10.13). Beuth, Berlin 2013
- Personenschutz beim Einsatz von Flurförderzeugen in Schmalgängen (DGUV Information 208-030, bisher: BGI/GUV-I 5160, 12.11). Hrsg.: Deutsche Gesetzliche Unfallversicherung, Berlin 2011 http://publikationen.dguv.de
- Einsatz von Flurförderzeugen – Personenschutz durch Erkennungssysteme (SP 04, 07.09). Hrsg.: Berufsgenossenschaft Handel und Warendistribution (BGHW), Mannheim 2009. SP-Schriften unter www.bghw.de
- Prüfliste für Personenschutz in Schmalgängen (SP 09, 10.10). Hrsg.: Berufsgenossenschaft Handel und Warendistribution (BGHW), Mannheim 2010

Expert Assistance

IFA, Division 5: Accident prevention – Product safety

Expert Committee trade and logistics of the DGUV, Mannheim

Literature Requests

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