

## Focus on the warehouse floor

# Flatness comes first

The warehouse floor is the all important surface that effects the speed, efficiency and often the safety and movement of the DC operatives and their manually operated hardware.

Kevin Dare, MD of FACE Consultants and a member of the Concrete Society working group on floor regularity puts forward some important views on producing the best surfaces underfoot.

“Floor flatness has a significant impact on efficiency and safety when materials are handled by fork lift trucks,” says Dare. “Although the Concrete Society Technical Report TR34 published in 1988 was a pioneering step and indeed contains the principal standards used to determine floor flatness in warehouses.”

## Long strip method

Back in the 1980s, when the original survey investigation work was carried out the basis for the new floor flatness standards, most floors - particularly those for narrow aisle operations - were constructed using the long strip method.

This method of construction virtually always produced very good longitudinal characteristics, in respect of both short wave length and long wave length.

Dare says that because the original working party found so few problems with longitudinal flatness, the original standard covered this aspect in a fairly cursory fashion.

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“The weakness of TR34 in this respect had been highlighted by the replacement of the traditional long strip method of construction with laser screeding, followed by grinding to achieve a reasonably flat finished surface.”

However, as the standard only applied to the transverse measurement and the short wave-length characteristics of the outer two wheel tracks, warehouse operators and truck manufacturers often found the trucks could not be operated as specified, particularly as they were increasingly expected to lift higher and travel faster.

“With many VNA trucks now incorporating sophisticated computer systems and even being guided down the aisle by low frequency cables in the floor, the standards of floor flatness actually achieved has become increasingly important,” adds Dare.

The Concrete Society set up a special working group in 2001 to consider the issue of floor flatness in defined movement areas such as warehouse aisles.

“The third edition of TR34 includes maximum values for differences in levels laterally and longitudinally for all wheel tracks within defined movement areas and also stipulates the rates at which levels change. Values are specified for three fork truck lift heights - up to eight metres, eight to

13 metres, and over 13 metres.

TR34 edition three also proposes a new method for surveying defined movement areas, using a profileograph that simulates the dimensions of the trucks to be used. “The latest edition of this document closes a significant loophole in the standards relating to floor flatness. Warehouse owners and operators should now be able to get the standard of flatness they require for safe, efficient operation of lift trucks without any ambiguity,” concludes Dare.

Another breakthrough in assessing floor standards and safety was recently launched in by Dare’s colleagues at Face Consultants.

## Point loading dangers

Point loadings up to 20 tonnes beneath mezzanine floor legs are common, and even relatively small racking systems can create point loadings of six tonnes, according to Tony Hulett of FACE Consultants. “If a concrete floor is only 100mm thick or has minimal reinforcement, it will not have the strength to carry these loads in the long term.”

In order to evaluate the suitability of a concrete floor, FACE will take samples to check depth, strength and reinforcement and perform CoverMeter surveys to investigate joints and reinforcement. Where required, detailed ground investigations can be carried out. With this information FACE can put forward proposals for the safe positioning of racking and mezzanine legs. The company can also check floor flatness.

“Companies that install heavy racking or mezzanines without knowing the condition of the floor on which they stand are taking quite a risk. Overloaded floors can crack, and can seriously disrupt the business. In the worst cases, planned loadings may have to be reduced,” concludes Hullett.

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