Test report summary

Smart Fix 1600 joules ST20

Report No. TR-14-003
Date: 2014-01-22
Place: Troax Test Center

Purpose

To document the effect of a high energy impact test from inside the hazard zone with Smart Fix machine guard system, the 60x40 posts and the ST20 mesh panels.

Test material

Panel: ST20 2050x700 mm, 2050x1000 mm and ST20 2050x1500 mm
Post: Standard post 60x40
Fixing: Smart Fix bracket
Floor fixing: Expander bolt M10x89

Test procedure

The test was performed in accordance with the pendulum test method stated in ISO 14120:2015 Annex C. Panels and posts were assembled with the Smart Fix system and fastened to the concrete floor with M10x89 expander anchors. The pendulum of 100 kg was adjusted so the impact hit the panel at 1446 mm above the floor, i e 1316 mm from the bottom of the panel (with a 150 mm floor gap). To reach the energy of 1600 J the 100 kg pendulum was raised 1629 mm from the starting point.

Impact energy

Pendulum mass: 100 kg
Pendulum speed: 20 km/h

$$E = \frac{mv^2}{2} = \frac{100*(\frac{20}{3,6})^2}{2} = 1543\,J$$

$$E = mgh = 100 * 9{,}82 * 1.629 = 1600\,J$$

Results

The Smart Fix wall performed well in the test and withstands the high energy impact. The centre panel and the posts absorb all energy and obtain a remaining deformation. The total deflection of the panel and the posts was approximately 345-380 mm depending on size of the panel. Despite the high energy impact there was no penetration and no parts departed. The Smart Fix bracket shows no deformation.

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