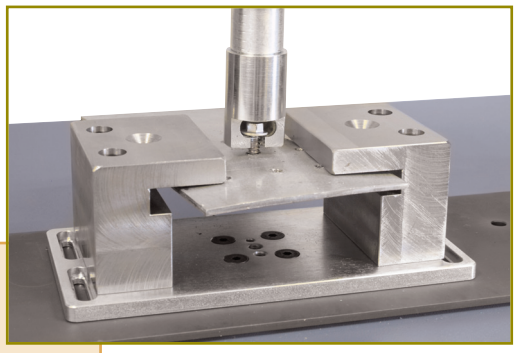
Screw Retention Force Of Building Materials



Screw head extrusion fixture grips screw and begins tensile application

Specification

A leading manufacturer and distributor of metal building roofing systems for the construction industry wanted to ascertain the pull out force of screws fixed to building materials.

For reliable and repeatable test purposes, the system would need to perform routine batch sample evaluations. The company estimated loads would measure in the region of up to 20kN, enabling a semi-automatic test to be performed.

The MultiTest 25-i computer-controlled test system

Fixturing shown with short link chain assembly

Solution

Mecmesin provided a twin-column test system capable of measuring forces up to 25kN. A bespoke fixture was designed to offer a suitable method of performing heavy-duty pull off tests, which gave the best possible accuracy.

The special fixture consists of two angled plates fixed directly onto the twin-column's base. This enables a strip of roofing or cladding material, loaded with screw heads, to be positioned, ready for testing. The screw head extrusion fixture is attached to the system's crosshead via a heavy-duty galvanised short link chain assembly.

The test was performed under laboratory conditions using the constant speed of the test stand and Emperor™ software to control and detect the break out force of the screw fixing from the roofing material or cladding. The test load range is up to 20kN, depending on screw size and material. Mecmesin's new proposed method proved more reliable as tests were repeatable and accurate in comparison to the existing test method.

The inclusion of Emperor™ software means users can interrogate results in much greater detail as the test data is represented in graphical form. Evaluation tools enable easy assessment of critical test features and draw accurate conclusions based on their findings.

System

- MultiTest 25-i - computer-controlled test frame, rated to 25kN
- ILC-T 25kN
- Screw retention fixture

Other Solutions

- Plasterboard
- Scaffold support netting

construction industry

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