

Clamp press bonding

Prebena, Uetendorf

2014



Timbatec has researched important properties of clamp press bonding on behalf of Prebena AG. This process is intended to develop a practical alternative to screw-press bonding according to DIN 1052.

The project

The initial situation

By joining wooden components,

composite cross-sections can be produced. These cross-sections have better structural properties than their individual cross-sections. The so-called screw press bonding has become established on the market and is approved according to the DIN 1052 standard. Clamp press bonding and its static properties are unknown today. Prebena AG is a leader in the manufacture and sale of pneumatic tools, nails and staples. It sees great potential in the field of staple press bonding and commissioned Timbatec AG engineers to develop a staple bonding system with the aim of using it for hollow box girders or ribbed slabs and to provide a system verification.

The construction

Test specimen and methodology

Four different

box girder elements with dimensions of 1.25 x 5.0 meters were manufactured, taking into account given manufacturing conditions and defined material components. A total of 630 test specimens were manufactured from these and subjected to shear testing. The adhesive joints of the test specimens were subjected to shear stress until fracture. In order to distinguish a fiber fracture from a cohesive fracture, the fracture surfaces were treated with a solution which discolours

Research result

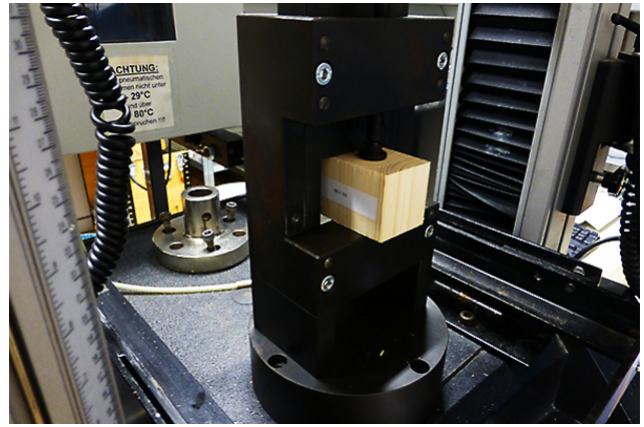
on contact with the wood.

Based on

the test results, a statement was made about the joint strength achievable with clamp bonding. After statistical evaluation, practical design values could be derived from the measurement results.



Test specimen for shear testing



Test specimen for shear testing



Broken surfaces before coloring



Broken surface after coloring

Woodworker

Holzbau Hummel + Rikli
3380 Wangen an der Aare

Adhesive manufacturer

Collano Adhesives
6203 Sempach Station

Client

Prebena AG
3661 Uetendorf

Timber construction engineers

Timbatec Holzbauingenieure Schweiz AG, Thun
3600 Thun