Self-tapping screws and threaded rods as reinforcement for structural timber elements – A state-of-the-art report

Abstract:
In timber engineering, self-tapping screws, optimized primarily for axial loading, represent the state-of-the-art in fastener and reinforcement technology. Their economic advantages and comparatively easy handling make them one of the first choices for application in both domains. This paper focuses on self-tapping screws and threaded rods applied as reinforcement, illustrating the state-of-the-art in application and design approaches in Europe, in conjunction with numerous references for background information. With regard to medium to large span timber structures which are predominately erected by using linear timber members, from e.g. glued laminated timber, the focus of this paper is on their reinforcement against stresses perpendicular to the grain as well as shear. However, latest findings with respect to cross laminated timber are included as well.

Stichworte:
Self-tapping screws; Rods; Reinforcement; Glued laminated timber; Cross laminated timber; Stresses perpendicular to the grain; Shear stresses

Zeitschriftentitel:
Construction and Building Materials

Jahr:
2015