SporX - Design and construction of a ten-storey timber building in Drammen, Norway

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Abstract

SporX is an innovative, ten-storey office building recently built in Drammen, Norway. It makes use of timber elements, both glued-laminated and cross-laminated, for all load-bearing structure above ground floor. The architectural requirement for two large cores servicing a relatively small floor plan allowed for a robust timber structural solution. Timber was chosen as a natural, sustainable, and readily available local material and to minimise building loads in a riverside location with poor ground conditions. All timber elements were fabricated from a LOD400 BIM model developed by the design team and fabricated with strict tolerances to allow for a rapid construction process. Larger element sizes were chosen as having design advantages both for robustness and for connections design. Connections are made using both screwed connections and proprietary concealed connectors. All the timber structure has been designed for R90 fire resistance.

Keywords: Timber, glued-laminated, CLT, cross-laminated, screws, fire, connections, BIM, fabrication, LOD.

1 Introduction

Degree of Freedom have designed the ten-storey office building, SporX, on behalf of the property developer Vestaksen Eiendom AS. The building is located close to the river in Drammen, Norway, as shown in the architect's render in Figure.1.

The main feature of this building is that all load bearing structural elements above ground level are timber. This paper highlights why timber was chosen as the structural solution having advantages over the more typical solutions in concrete or steel. Furthermore key aspects of the design, modelling, fabrication and construction processes are explained.

Construction of the building is due for completion in 2022.

Figure 1. SporX location