

# Hybrid domes made of glulam and steel - a study of the structure

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**Abstract** The paper presents a brief history of long-span structures. Also a hybrid structure consisting of a rigid dome and tendons is proposed. In this hybrid structure the rigid components generally function as compressive members and the tendons as tensile members. The rigid dome is made of glued-laminated or solid timber. An analysis covering:

- a) the influence of the tendon diameter and the prestressing force,
- b) strain and stress in the rigid structure,
- c) the static behaviour of the hybrid structure,
- d) deformations under static load

is carried out. The behaviour of the hybrid structure and that of a purely rigid structure are compared. Examples of existing hybrid and glued-laminated timber dome structures are shown.

**Keywords** hybrid structure, timber, dome