RATIONAL STRUCTURE OF COMPOSITE TRUSSED BEAM

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The traditional solution of trussed beams is with the vertical edge struts. But it was shown, that the inclined edge struts are preferable from the point of view of materials consumption in some cases. The composite trussed beams with the inclined and vertical edge struts were considered. The trussed beams consist from the top and bottom chords, one central vertical and two inclined or vertical edge struts. Steel, timber and reinforced plastics are considered as the structural materials of composite trussed beam.

Rational from the point of view of materials consumption distances from the support to the joint of the edge strut with the top and bottom chords so as height of trussed beam and vertical dimension of the edge strut were evaluated by the response surface method for the main load bearing elements of the roof structure. It was shown, that the rational from the point of view of materials consumption distances from the support to the joint of the edge strut with the top and bottom chords so as height of trussed beam and vertical dimension of the edge strut are equal to 0.237, 0.158, 0.207 and 0.135 part of the span, respectively. The dependences of materials consumption and distances from the support to the joint of the edge strut with the top and bottom chords so as height of trussed beam and vertical dimension of the edge strut were obtained on the base of numerical experiment. Rational from the point of view of materials consumption structure of composite trussed beam was suggested.

It was shown, that the using of reinforced plastics for some structural sub elements of trussed beam allows to decrease the materials consumption.