



## Optimum design of a uniplanar CHS truss for fatigue

<http://www.firstlight.cn> 2003-12-20

The new IIW (International Institute of Welding) fatigue design recommendations are used for the determination of the optimum strut dimensions and truss height minimizing the structural mass or cost. In an illustrative numerical example a simply supported uniplanar CHS truss with parallel chords is designed, which is loaded by a pulsating force. An advanced cost function is minimized which contains the costs of material, cutting and grinding of strut ends, assembly, welding and painting. Fatigue design constraints are formulated for governing X- and K-gap joints. Six strut dimensions are optimized for a series of discrete truss height ratios and the optimum height ratio is selected considering the minimum cost. A parametric investigation is made to find the relation between the optimum truss height ratios and the span length.

[存档文本](#)