

连栋塑料温室GLP-728结构的力学分析和优化设计初探

Mechanics Analysis and Optimum Design of Structure of Plastic Greenhouse GLP-728

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中文摘要:

连栋塑料温室结构安装安全方便,投资相对节省,在我国得到广泛地应用。该文从结构力学的角度,对杭州地区典型的连栋塑料温室GLP-728结构进行理论分析,并采用优化设计理论,借助结构有限元分析软件,在原结构的基础上优化设计出一种安全、经济的连栋塑料温室结构。优化设计后的连栋塑料温室,其横边柱、拱架和中柱的强度利用率分别提高了18%、3%和25%,纵边柱由非安全失稳利用转向稳定安全性合理利用,主体结构节省钢材3.7%。

英文摘要:

Multi span plastic greenhouse is expedient and safe to install, economical to invest. It is popular in China. This paper analyzed existing typical structure of multi span plastic greenhouse (GLP-728 in Hangzhou area) by means of structural mechanics, and worked out a kind of safe and economical structure by use of optimum structural design theory and software of finite element analysis. After the structure was optimized, the intensity utilization coefficient of horizontally side post, arch steel tube and mid post increased 18%, 3% and 25% respectively, the vertically side post which was utilized insecurely and insatiably utilized securely, stably, and reasonably, and steel of main body was saved about 3.7%.

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