International J. of Engg. Research & Indu. Appls. (IJERIA). ISSN 0974-1518, Vol.4, No. II (May 2011), pp 201-209

ECONOMICAL STEEL TRUSSES FOR INDUSTRIAL BUILDINGS

A. M. GILDA AND S. R. CHAUDHARI

Abstract

An attempt has been made in this paper to find the economy of steel members subjected to axial forces i.e. truss. Trusses are triangular framework in which the members are subjected to axial forces due to externally applied load. In a truss, the members are so arranged that all the loads and reactions occur only at the joints [3]. Trusses are used in roofs of single story industrial buildings or for the multistoried buildings for large span. For analysis, to find the forces manually for various loads may be tedious and time consuming. To make it more convenient a computer program in MS-EXCEL has been prepared here in this work, which gives all the nodal forces required for analysis. It is very difficult to find the optimized section for various combinations of loads. It is feasible to use software such as 'STAAD Pro' to study various trusses, their shapes, sizes and finally to achieve the most economical truss. In this paper, initially the analysis of traditional trusses for various spacing of column has been carried out keeping the rise constant. After that, the analysis has been extended further for various spacing of column and rise. The analysis and design in angular and tubular sections have been performed. After which the comparison of this traditional pattern with a new shape of truss has been work out.

Keywords: Traditional truss, Conceptual Design Phase, Nodal forces, Tubular section, Purlin

C Ascent Publication House: http://www.ascent-journals.com