Abstract

The objective of this project work is to design an aircraft hangar structure with an area of approximately 56x56 m, for the maintenance purpose of aircrafts. Considering the dimensions of aircraft into account, the opening of door system should not be less than 40m in width and 22m in height. Additionally, a preliminary draft of the site and floor plan of a multi-story office and workshop complex with a combined area of approximately 16x16 m and a three story. Analysis and design of the proposed structure are carried out by assuming that the subsoil at the construction site has sufficient load-bearing capacity. Design and calculations of all structural steel members are carried out according to American codes and their respective Etab software is used in the design process and Auto cad drawing tool is used for producing technical drawings. Analysis and design of three typologically different structural systems for the roof structure are carried out. A comparative study is performed between the three different structural systems and a suitable and economical structural system is considered for the final design. The major structural components such as frames, bracings, gables as well as secondary structural components of the hangar structure are designed under all types of loading actions and outlined by technical drawings. Typical connections of the structure are designed and outlined. Moreover, an appropriate 3D visualization of the hangar structure is incorporated in this thesis.