

Bioclimatic Design of Tall Buildings

Summary:

- The concept of tall buildings is determined by the level of civilization and technological progress of the countries, where their heights in some regions can exceed 400 meters. With increasing the importance of the public environmental problems and the rapid increase of tall buildings in city centers, it became necessary to study and define how these buildings are compatible to the environment.
- This research aims at surveying the design considerations of tall buildings in order to study the bioclimatic design of these buildings to satisfy the comfort for the building's users over the year by using passive energy sources, which depend on natural ventilation and the utilization of sun light. This reduces the energy consumption and the associated emission of carbon dioxide and other pollutants of the surrounding environmental.
- This research is focused on the study of the design features for tall buildings including service cores (which ensure natural lighting and ventilation for these cores) as well as orientation of the building and defining openings' places in facades (for energy conservation) and natural ventilation (in order to design the spaces in these buildings to move air from outside into inside taking into account the minimum limit of privacy, which is requested by the building's users).
- This research is concluded by studying the Commerzbank Headquarters Building in Germany being considered one of the examples of bioclimatically-designed tall buildings.