

Computational analysis in design and manufacturing processes

ABSTRACT

This study presents the role and importance of computational analysis in facilitating design processes, which can also be used to assist manufacturing methods. It discusses the advantages of computer simulation within the design and manufacturing processes by considering jointing systems for Malaysian office furniture as the case study. The main function of the jointing system is to enhance design for assembly processes. The focus of the study includes two proposed designs of the jointing system which may be able to fulfill the said requirement. A computational analysis via the finite element method was carried out on the proposed designs to explore the strength of the joints, factor of safety (FOS), and product usability. Both proposed designs were developed based on the snap fit jointing principle. The results of the analysis revealed that design proposal 2 was found to be superior to the current design in terms of ease of assembly and efficiency.

Keyword: Computational analysis; Computer simulation; Facilitating design processes; Manufacturing processes; Office furniture