Expert material selection for manufacturing of green biocomposites

ABSTRACT

The innovation in material science reveals more materials day by day and the material database grows exponentially. The conventional material selection systems fail to handle this large material database. The explosion all over the world is increasingly using the computing power to solve complex problems. Accordingly, it is applied in the field of engineering to obtain an optimum solution. The Expert System is a computer application that emulates the decision-making ability of a human expert for a specific task. This chapter presents a brief perception of implementing the expert systems for material selection of green bio composites. Due to the increasing ecological problem the synthetic materials are being reduced in the manufacturing industry and replaced by so called "bio composite" materials. The bio composites have different fibre orientations, matrices and constitutions would result in diverse characteristics in physical, mechanical, thermal and environmental properties. These dissimilar attributes of bio composites would increase the challenges for the material selection process. Hence, few case studies with automotive interior components are discussed for better understanding and to show the implementation of the expert system for the material selection of green bio composites. The result shows that these expert system has dramatically advanced the material selection to enforce green technology and sustainability in manufacturing and design.

Keyword: Material selection; Expert system; Bio composites; Automotive; Manufacturing; Sustainability