

Multi-criteria decision-making tools for material selection of natural fibre composites: a review

ABSTRACT

Materials selection in manufacturing process is an important stage and should be performed in parallel with selection of manufacturing process. In automotive industry, production of green automotive component could utilize the natural sources such as plant fibres. In recent years, several multi-criteria decision-making (MCDM) techniques are suggested to choose the best materials for particular application. Materials selection tools for natural fibre composites are studied from past researchers with the summary of the advantage and disadvantages. In addition, new optimization approach in materials selection by using statistical analysis such as multiple linear regression (MLR), response surface methodology (RSM) and Taguchi method (TM) is proposed in this study. The proposed method could evaluate the criteria or attribute in materials selection precisely by analyse the relationship of the parameters, goodness of fit, correlation, analysis of variance (ANOVA), determination of coefficient and the significant criteria in to the desired goal of the design problem.

Keyword: Materials selection; Multiple-criteria decision-making; Natural fibre composites