

Integrated AHP-TRIZ innovation method for automotive door panel design

ABSTRACT

This research is intended to improve the ‘Theory of Inventive Problem Solving’ TRIZ methodology by integrating with the Multi Criteria Decision Making (MCDM) tool; Analytical Hierarchy Process (AHP). This integration works as a support tool to assist the TRIZ practitioners or design engineers. AHP is employed to rank ideas generated by TRIZ in order to select the most ideal idea further to next stages. This integration was analyzed and validated by a study case of door panel of a sedan car. Both front and rear door panels are covered in this study. A survey of interior’s problems and customer’s preferences had been conducted in order to identify the criteria and weights for AHP evaluation processes. Basically, there were 10 ideas triggered by TRIZ contradiction and principle approach. The ideas were refined and ranked through AHP’s Expert Choice software. Several ideas had been combined and finalized as one ideal improved design. Applying AHP into problem solving method of TRIZ results in avoiding cost waste and increasing the design efficiency during the product design and development processes.

Keyword: Analytical hierarchy process; TRIZ; Integration; Design improvement