A Research for Fuzzy Decision Making in the Initial Stage of Product Design

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ABSTRACT

Many of manufacturing industries design the product in the stage of initial almost lies on the experienced person to do the concept of design estimate. However, when this person is retiring, this will bring the vast effect to the company and may be nobody has this ability to take this kind of job. And bring the company ’ s research The concept-design development of product has effect each other during the design process. The concept-design estimate is multiple attribute decision making problem. And during the design estimate, different kinds of customer ’ s need and design ’ s property should be considered. Indeed, some design ’ s property could not be quantification. Besides, most of design estimate is fuzzy and height uncertainly during the stage of design estimate. So that, using the fuzzy set theory, linguistic variable and fuzzy set operation makes easier during the design estimate ’ s process. This research established a simple estimate model and using a structure estimate method. With this model, anyone of designer can do the estimate of concept design. First, using simple QFD rule and fuzzy set operation to gain the important-degree between customer ’ s demand and engineering demand or design property. Using TOPSIS methodology to select sorting of the concept design ’ s scheme. Then, the sorting result of concept design ’ s scheme will make the important reference of selection the parametric design.

Keywords : Concept-Design、QFD、Fuzzy Set Theory、TOPSIS

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