STYLISTIC DESIGN ENGINEERING (SDE) FOR AN INNOVATIVE GREEN VEHICLE FOLLOWING QFD AND TRIZ APPLICATIONS

LEONARDO FRIZZIERO, GIAMPIERO DONNICI, DANIELA FRANCIA, GIANNI CALIGIANA & ANNARITA GADDONI
Alma Mater Studiorum University of Bologna, Department of Industrial Engineering, Viale Risorgimento, Bologna, Italy

ABSTRACT

With this article, we intend to set the first strategic phase of the product development process, that is to say the one related to the conceptual project. In particular, this work refers to the installation of the project of an innovative, green, sustainable means of transport based on renewable energy, to move to the center of medium and large cities. The discussion presented presents a series of cutting-edge methods, in series of logical use, in order to make both strategic and technical decisions. Among the inputs of the methods, we will have an analysis of customer needs, competitive analysis, a series of technological objectives (or performances) as a result of the work in progress. In particular, we will first use the quality distribution method (QFD), then the method of analyzing competition through Benchmarking to identify the quantitative requirements that will give us the opportunity to create an innovative product, enhanced by a Top-Flop analysis to determine the number of requirements of the best product on the market, which will be the limit to be overcome to embody innovation in a new project. As for the QFD, the input values are the customer's requirements, obtained with the "Six questions" method; then applying an interrelationship of the QFD matrix, the outputs of the method described above were obtained, representing the classification of all the various urban transports, classified according to user preferences.

The application of the competition-oriented method of competition analysis through the use of Benchmarking is applied after the QFD.

The inputs are the quantitative specifications, that is the performance, of all the hoverboard models of all the brands on the market. The output, however, is a comparison graph that contains all the performance values for each model. Other inputs will be table data, other outputs, values (or ranges of values) for each performance, so as to obtain a technical specification with quantitative objectives to obtain an innovative product.

KEYWORDS: Design Engineering, TRIZ, Quality Distribution Method, 3D & Hoverboard

Received: Feb 02, 2019; Accepted: Feb 22, 2019; Published: Apr 01, 2019; Paper Id.: IJMPERDAPR201979