

A HIGH RECONFIGURABILITY MICRO-CAR

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Abstract

Car market is nowadays asking more and more for vehicles whose basic characteristic is versatility; that means the possibility to meet the different demands of the customers binded to their daily urban, extraurban life and free time. During the concept design process, versatility becomes therefore a guideline by which thinking out and defining the concept of the vehicle. In fact the need to meet the daily demands of the customers may be found out in the different architectures that have been developed since now and are actually identified by different acronyms (e.g. MPV, SUV). Seen the generality of the term “versatility”, the need has risen to identify what customers are asking for in a modern car and, as a consequence of their segmentation and classification, it has observed that it is necessary to think about new vehicles able to adapt themselves to the human needs as well as an organism changes its functionalities in order to size itself to the urban and extraurban habitat in compliance with the environment and with a customizable shape. The car that it is necessary to offer customers is a multi-purpose one, with the possibility of changing, in accordance to different needs, its configuration, not omitting the optimization and the evolution of all those parameters and technical features that are typical of a car. The vehicle concept this case study’s focusing on, is about a multipurpose, reconfigurable car either in the external look or in the internal one by using modular parts joined or coupled to a base frame, for a urban use expressly, but for an extraurban one when needed. The optimization of both external dimensions and cabin space is gained by using a base frame made of a rod-crank type kinematism, which is the heart of the activity actually in progress in Elasis. The external reconfigurability, directly connected to the base frame, regards either changes in shape, such as the changeover from a micro-sedan to a micro pick-up, or a modification of some typical features such as the wheelbase; i.e. the possibility to change from a two seat micro car to a four seat one. Cabin reconfigurability concerns all the on board systems (seats, dashboard, commands, coverings and so on) related to the cabin space availability and disposal. Space availability is ensured by the flexibility and the interactive relationship between the base frame and the cabin equipment components endowed with movements able to optimize space. The present activity represents not only an opportunity for Elasis to explore new technical and technological solutions to provide for possible future developments, but also an opportunity to create a cooperation with the suppliers in order to develop innovative vehicle systems. In the paper that will be reported, an introduction will be made about the mechanism of the wheelbase adjustment patented by Elasis, and the vehicle configurations realized in compliance with the devices and/or kinematisms designed to get cabin reconfigurability. Process - technological solutions to be carried out on various microcars.

Keywords

Reconfigurability, innovation, versatility, environment