

Conceptual Design of 2-Seater Narrow Width Passenger Car for India



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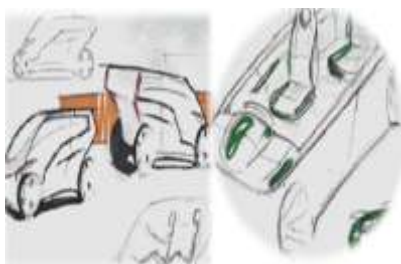
Keywords: Narrow Width Car, Passenger Ergonomics, Car Interior, Seating Layout, Vision Analysis

Abstract:

Passenger car is one of the popular modes of transportation in India. At present in Indian conditions, width of passenger car is varying from 1.2 m to 2 m. There is a stringent government regulation on the dimensions of the passenger cars considering excise duties. Most of the small passenger cars accommodating 4 passengers, besides providing boot space. In the present Indian scenario, college students, working professionals prefer personal transportation rather than relying on public transportation like buses and trains. Most of them are carrying educational resources, electronic gadgets, laptops and communication systems during commuting. In recent times, there is a drastic increase in the sales of small passenger due to lack of parking space, traffic congestion and narrow roads. So there is need for narrow width passenger car that suits to the city driving conditions besides satisfying the lifestyle of youth and working professionals. In this project work an attempt has been made to conceptually design a narrow width passenger car for Indian customers emphasizing on styling, passenger ergonomics and safety.

Initially literature survey and Gemba study was carried out to understand the requirements of narrow width passenger car for Indian conditions. Quality Function Deployment (QFD) and Product Design Specification (PDS) were generated matching technical requirements and customer's voice. Concept sketches were developed for narrow width passenger car incorporating ergonomic seating layout, interiors and aesthetically pleasing exterior. A two seater back to back seating layout was incorporated to reduce the width of the car without sacrificing the passenger ergonomics. The detailed design and geometric models of the selected concept were generated incorporating all the features. The scale down mock-up model was developed for the exterior and interior of the two-seater narrow width passenger car as per the detailed design.

The conceptually designed 2-seater narrow width passenger car was analyzed to verify the features and facilities incorporated in the design. Ergonomic analysis on seating system was carried out to understand the seating comfort of passengers. Vision analysis was carried out at driver position to get field of view. Scaled mock-up model was developed as per the detailed design and demonstrated the features and functionalities of the design.



Conceptual sketches



Rendered geometric model of narrow width passenger car



Reach analysis for the driving controls inside the car cabin



Ingress, egress and seating ergonomics



Vision analysis from driver's seating position



Scaled mock-up model