

Design and Development of Motorised Mobility Vehicle for Indian Market



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Abstract:

As per census, disabled and aged people constitute for 10-12% of total population of the country and this percentage tends to increase with time. So there is a growing need to help them in being independent, reduce their dependency and encourage them to be a part of social life. The main problem they face is mobility. If they are provided with a mobility vehicle that is easy to drive with an advantage of using it both indoor and outdoor, it makes them feel comfortable at unknown places with no special arrangement or seek help.

A detailed study was done on users and existing mobility products available in the market to identify the needs of these people and the problems encountered in the existing vehicles. Using these data Quality Function Deployment (QFD) and Product Design Specifications (PDS) were generated and concepts were created. These concepts were presented among the potential users, doctors and industrial advisers and the concept was finalized based on the ratings obtained by weightage. For finalized concept, calculations were done to analyse the type of material to be used, type of motor drive, its capacity and CG of the whole vehicle. Important components like motor and battery were finalized based on the current and voltage requirement of the drive system.

User trials were conducted on the physical model and feedback was collected from the users. The product met all the parameters defined in the initial stages of the design and development. Based on the feedback, short comings were considered for future development of the vehicle.



Virtual final concept 3 D model



Expanded and collapsed view with dimensions



Working model and rendered model