Design and Development of Mobile Maintenance Vehicle for BMTC

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Abstract:

Public transport and private vehicles are growing in exponential fashion to address the daily commuting needs of urban population. In addition to the traffic congestion because of this, failure of public transport buses also add to the traffic hassle. Mobile maintenance vehicles are an important asset in public transport corporation like Bangalore Metropolitan Transport Corporation (BMTC). Currently available mobile maintenance vehicles are ineffective in addressing the problem of broken down buses. Hence, a new mobile unit was designed such that it helps in resolving the problems related to currently existing BMTC’s mobile maintenance vehicles.

The design process was started with background study on BMTC transport bus breakdowns. A literature survey was conducted to understand the different types of mobile maintenance vehicles available with transportation companies across India. User study was carried out in four major BMTC bus depots on mobile maintenance vehicles in use. The problems faced in the particular area were identified by interviewing the bus mechanics and their supervisors. The solutions to their problems were identified to be incorporated in new design concepts. Based on the user study, Quality Function Deployment (QFD) and Product Design Specifications (PDS) were generated. Concepts were generated based on QFD and PDS. The final concept selection was done by interacting with the users and using dot selection method. The 3D modelling of the final concept was done using CATIA software and then a digital rendering of the model was done to get a better perception of the vehicle. An ergonomic analysis was carried out on the final concept to verify the space requirements in the vehicle. A scaled model of ratio 1:14 was then made for validation of the design.

It was found that the development of new mobile maintenance vehicle for BMTC will help in solving several problems by providing better storage space, handling space and ergonomic standards in the mobile unit.

Ergonomic analysis of the mobile maintenance vehicle concept

Digital rendering of the model
Mock up model

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