比亚迪 E5 整车及车身设计

摘要: 电动汽车是汽车行业未来发展方向，全球各大车企都在致力于电动汽车的开发研究，针对这一趋势比亚迪公司开发自己的 E 系列汽车，目前 E 系列已从原来的E1 发展到了 E6。本次设计源于比亚迪公司工程设计项目，对比亚迪E5进行整车及车身设计。

设计中根据汽车构造，汽车理论，电动车设计，汽车制造工艺等设计理论，设计出一辆以家用为主的经济型 A 级电动汽车。根据汽车的实际使用工况，确定出比亚迪 E5 的总体尺寸参数，质量参数以及动力参数。综合考虑经济性和实用性等因素，确定了比亚迪 E5 的总体布置形式为前置前驱。

对车身的造型进行设计，根据空气动力学和美学的原理，设计出车身流畅的线条和曲面并进行三维建模。对车门做具体设计，确定使用分体式车门结构，并且对门框及其零部件通过三维建模软件 UG 进行三维结构设计对部分零件使用 AUTOCAD 画出二维图纸。本次设计结合企业的实际与市场的需求，电动车总体结构布局合理，零部件设计符合规范要求，实现了预功能，达到了预期的效果。

关键词：电动车；车身；车门；三维建模； 汽车动力学

Overall and body structure design of electric vehicle

Abstract: Electric vehicles are the future development direction of the automotive industry. Major auto companies all over the world are devoted to the development and research of electric vehicles. In response to this trend, BYD has developed its own E-series cars. At present, the E-series has evolved from the original E1 to E6. The design originated from the engineering design project of BYD Company, which designed the vehicle and body of BYD E5.According to the design theory of automobile structure, automobile theory, electric vehicle design, automobile manufacturing process, etc., an economical A-class electric vehicle mainly designed for households was designed. According to the actual working conditions of the car, the overall size parameters, quality parameters and quality parameters of BYD E5 are determined. Considering the economic and practical factors, the overall layout of BYD E5 is determined as the front precursor. Design the shape of the car body, according to the principles of aerodynamics and aesthetics, design the smooth lines and surfaces of the car body and carry out three-dimensional modeling. Make specific design for the door, make sure to use the integrated door structure, and design the three-dimensional structure of the door frame and its parts through the three-dimensional modeling software UG. Use AutoCAD to draw two-dimensional drawings for some parts. This design combines the actual situation of the enterprise and market demand, the overall structure of the electric vehicle is reasonable, the design of the parts meets the requirements of the specification, and the pre-function is realized, and the expected effect is achieved.

Key words: Electric Vehicle; Bodywork; Car Door; 3D Modeling; Vehicle Dynamics