Design of an Automotive Headlamp Considering Style and Performance

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Abstract:
Headlamps serve the purpose of an eye to an automobile both in style and function. They illuminate the road space in front of the automobile and ensure the dual purpose of ‘to see’ and ‘to be seen’. The aim of this project was to design an automotive headlamp considering style and performance.

A study of various available headlamp designs was made to understand the basic requirements of a headlamp and to understand the latest technologies being used inside the headlamp. The standard norms that need to be followed in design and installation were reviewed. A user study was conducted and customer voice was converted into technical voice and Quality Function Deployment (QFD) was prepared.

Three concept designs of headlamps were made and the final concept was selected using weighted ranking method. A detail design was made for the final selected concept. The final design concept was further validated using photometric and thermal analysis. A mock-up model was also made for the validated concept using polymer sheets. A head lamp with better style and better performance was designed.