

## **A study of HID light reflector design of a streetlight**

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### **Summary**

The purpose of this study is to present the process of development of HID (High Intensity Discharge) light reflector of a streetlight. The new application of HID light source for streetlight product is proposed in this study, the advantages of HID include low power consumption and single point light source emitting. The study includes the introduction of HID streetlight structure, the lighting efficiency comparison of various light sources (ex. High Pressure Sodium-lamp “HPS”, High Bright LED “HB LED”, etc. . . ), and the design of streetlight reflector. The emphases of the experiment are focused at light reflector design; the streetlight module is composed of HID light source, light reflector, power source and light source accessories of HID light source. On the basis of height requirement of streetlight, the study shows the simulation results of height 5, 8, 10 and 12 meters respectively. The experimental results are predicted by using TracePro<sup>®</sup> software. The simulation results include the light trace, luminous uniformity of target plan, and the luminous ratio of maximum to minimum. The reflector design is obtained by adjusting the profile of the reflector to get the adequate luminous uniformity. Finally, a prototype is made and an experiment is conducted. The results comparison between experiment and analysis is also discussed.

**keywords:** HID, HPS, HB LED, reflector, target plane, light trace, luminous, TracePro<sup>®</sup>

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