LED in Headlight Application

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Forecast of New Car Market

- New Car
- EV
- AP
LED Adoption in Automotive Lighting

- Interior: 30%
- Audio: 100%
- Dashboard: 70%
- Rear: 50%
- Turning: 60%
- DRL: 100%
- Headlight: 10%
Why LED?
Energy Saving ✔
Durability ✔
Fancy looking
LED in Headlight Application
Design Rule of Headlamp

Photo taken by ARTC
Pioneer Stage

[Projection Light]

[Normal Light]

Photos from ARTC, Osram, Lumileds, GPI, Edison, Everlight, Lextar
Warm-up Stage

Photos from Audi, ARTC, Osram, Lumileds, Nichia, Samsung
Speeding Stage

Photos from Audi, ARTC, Osram, Lumileds, Soeul Semi, Nichia
Summary

- Smaller, brighter.

- Price: from USD 3~2.5/W to USD 0.6~1.2/W.

- Qty: from 1 pc, 2 pcs... 6 pcs to 84 pcs (M-Benz).

- Cost in overall lamp cost: from 25% to less than 10%.
What next?
Adaptive Front Light System

With AFS

Wider lighted area
AFS will redirect low-beam headlights according to the curve to illuminate the road ahead.

Photos from Toyota
Adaptive Front Light System

Camera-Based Advanced Front Lighting System (CBAFLS)

by Ford

Ford新開發的頭燈光源技術，結合自動轉向頭燈、紅外線偵測、影像辨識技術、LED光源控制、GPS導航定位等技術。
Adaptive Front Light System

Intelligent Laser light for Compact and High-Resolution Adaptive Headlights (ILAS)

by Audi

Audi全新Matrix Laser 技術是由雷射光點聚集成為高光束燈源，將光束投射在路面上；可依車輛行駛速度，控制雷射光束的光圈孔徑角度和大小，使其投射光源強度和照射範圍同步增加。

Article from Audi
Visible or Invisible?

Seeing or Be seen?
Thank you!

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