VOLVO

MICRO-LED FOR AUTOMOTIVE LIGHTING

OEM STAKES INSIGHT

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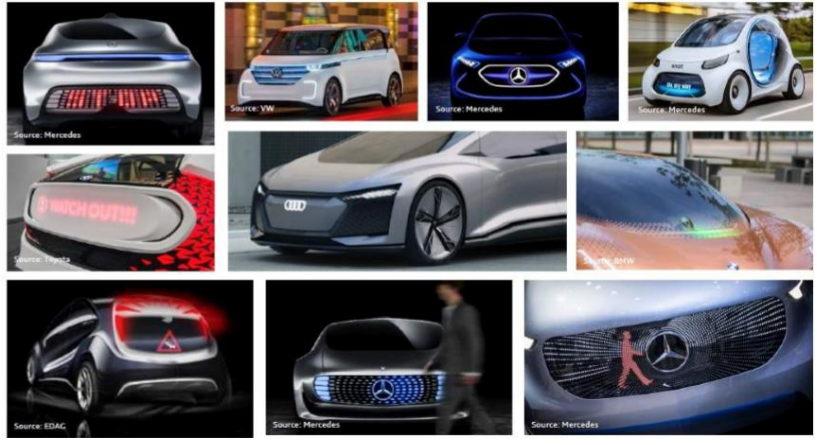
EPIC European Photonics Industry Consortium

What are the usage ?

Lighting



Signaling & communication

Road marking

Source : Google

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Focus on lighting & intelligent lighting

Target : To have always the maximum light on the road whatever the traffic to improve safety

Solution : Adaptive driving beam with partial high beam that will not glare oncoming cars

Resolution is one f the key aspect of the success of this function

Camera detection

Source : DVN Munich 2020

Lighting beam pattern

Stakes for lighting

Usage of Micro LED to do High Definition headlamp

1/ Beam pattern :

- Lumen on the road
- horizontal field of view : 90 degrees
- Vertical field of view : 20 degrees

2/ Power consumption

3/ Size

4/ high definition system (resolution) to have the maximum accuracy and minimum keep out zone (black area)

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Current High definition headlamp on the road

DLP solution

Light source + micro-mirrors
100% of light source ON whatever the light on the road

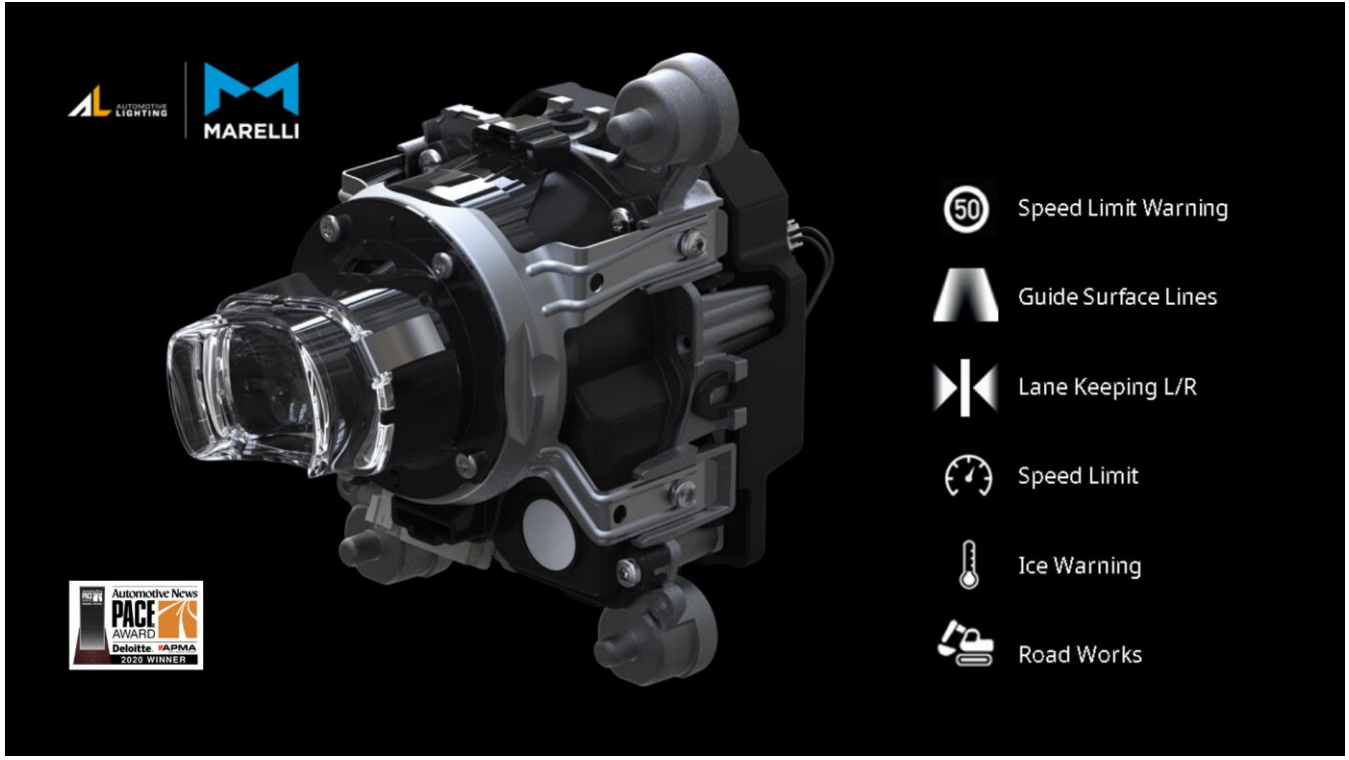
Estimated Size : 150mm x 150mm x 150mm

Estimated Power : 60 W

Estimated horizontal Field of View : +/-7 degrees

Estimated vertical Field of View : +/-4 degrees

1,3 Millions Pixels



Source : Google

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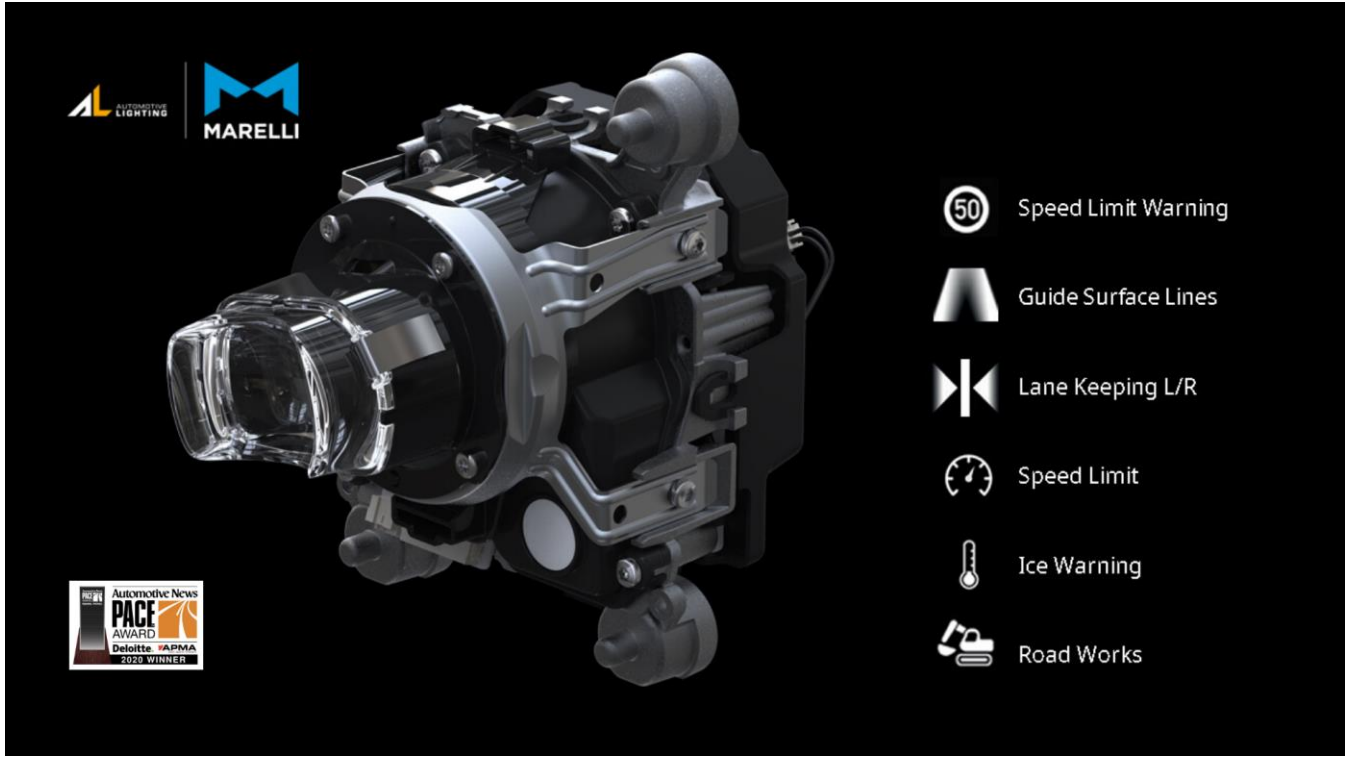
Current High definition headlamp - Limitation

⇒ Need an additional low beam module and high beam module

⇒ Low beam + high beam ~ 200 W / cars

⇒ 4g C02 / autonomy of battery if BEV

⇒ (Price)



Source : Google

High definition headlamp with Microled – 1st proposal on the market

Estimated Size : 105mm x 90mm x 125mm

Estimated Power : 55 W

Estimated horizontal Field of View : +/-17 degrees

Estimated vertical Field of View : +/-4 degrees

4 K Pixel

⇒ Need an additional low beam module and high beam module

⇒ Low beam + high beam ~ 200 W / cars

⇒ 4g C02 / autonomy of battery if BEV

⇒ Not enough improvement

Source : DVN Munich, January 2020

High definition headlamp with Microled - Specification

Estimated Size : H80mm x W80mm x D100mm

Estimated Power : 30 W

Estimated horizontal Field of View : +/-45 degrees

Estimated vertical Field of View : +/-10 degrees

No additional module to do low beam and/or high Beam

xxx K Pixel

Xxx lumen : 1000lm for Low beam on the road, + 1000 additional lm for High beam

EPIC members are welcome on board to find solution