NEW VEHICLE FORWARD LIGHTING TECHNOLOGIES

WORKSHOP ON HEADLAMP SAFETY METRICS: BALANCING VISIBILITY AND GLARE

July 13, 2004
Washington, D.C.
Agenda

- Reflections on the Past
- “The Times They are A’changin”
- Through the “Looking Glass” Tomorrow and the Future
- A “Ray” of Hope
Evolution/Revolution

- **1940 - 1983**: Sealed Beam Headlamps (round or rectangular)
- **1984 – 1994**: Aero Era
  - Composite headlamps
  - Replaceable bulbs
- **1994 – Today**: Complex multifunction lamps with Electronics

- Price Range:
  - $5 to $110

- Timeline:
  - 1940
  - 1950
  - 1960
  - 1970
  - 1980
  - 1990
  - 2000
  - 2010
Yesterday
Rectangular and Round Sealed Beam Headlamps
Lens Optics
Lens Optics
Lens Optics
Lens Optics
Parabolic Reflector with Lens Optics

Reflector

Lens
Parabolic Reflector with Lens Optics

Lens

Reflector
Complex Reflector
Complex Reflector
Complex Reflector
Projector System
Projector Low Beam – Complex High Beam
The Gattling Gun
Projector Headlamps with AFS
Tomorrow
Light)
Breakthrough Styling
Low Beam
Fog Lamp
LED Lamp

Reflectors

LED’s

Outer Lens
Tokyo Motor Show:
Tokyo Auto Show:
Tokyo Auto Show:
LED Front Lighting – All Functions
Slow Speed Cornering Function
LED Forward Lighting Concept
The Future
LEDs: Concept Vehicles (Hyundai, Mazda, Mitsubishi)
LEDs: Concept Vehicles (Nissan, Subaru)
LEDs: Concept Vehicles (Suzuki, Toyota)
LEDs: Concept Vehicles (Daihatsu, Honda)
Concept Vehicle with Hybrid System
Lighting Headlamp History

- Sealed Beams/Lens Optics
- Complex Reflector
- Projector Beam
- AFS
- LED Forward Lighting
You Can Only

Imagine What’s Next