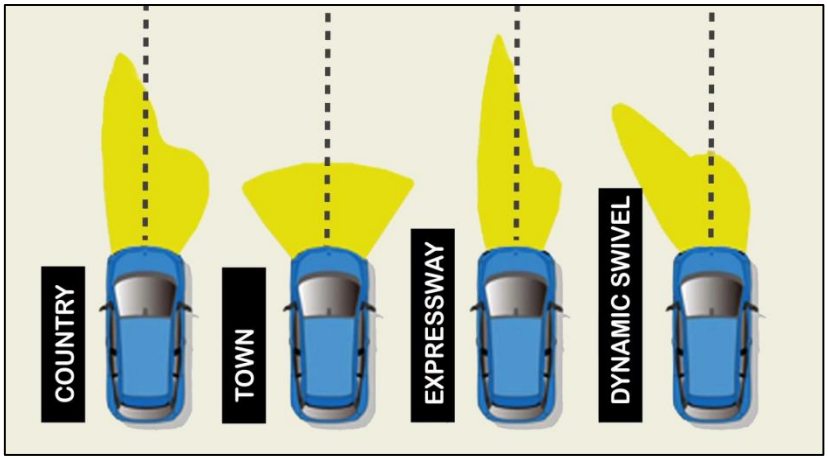
Adaptive Front Lighting System (AFLS)



Technology

Adaptive Front-Lighting System (AFLS) suitable for Indian Road and Traffic conditions

TRL: 6 (Prototype with Verification and Validation)

Properties/ Features

- Provides wider visibility in town and country roads during night driving
- Provides longer range of visibility at higher speeds especially on expressways
- Avoids excessive glare on oncoming passengers as the system encourages use of Low Beam
- Enhances visibility around bends owing to it Dynamic Swivel Functionality
- Automatically aims light according to the passenger occupancy
- Tuned to Indian road and Traffic conditions
- Cost-effective Indigenous solution

Application

- Applicable for Advanced Lighting Technologies in passenger and commercial vehicle segment
- Application for 2&3 Wheelers can also be developed
- Specific application for Off-Road vehicles and Construction & Mining equipment/vehicles can also be developed

Scale of Validation Achieved

The AFLS equipped vehicle was driven through various road geometries and traffic conditions including Ghat sections for verification of Dynamic Swivel, and on expressway for high speed related testing. Calibration and verification of this system was carried out on test tracks and steering pad. The system and its functionalities have been evaluated as per standards AIS-008 and AIS-127, equivalent to ECE-R48 and ECE-R123 respectively.

Intellectual Property

NA

ARAI Technology Offerings

Abstract

The Automotive Research Association of India has developed indigenous and cost effective technology solution for Adaptive Front Lighting System (AFLS) for mid-segment cars and SUV/MPV. The algorithm is designed to address needs of Indian road and traffic conditions. AFS adapts the headlamp beam pattern to driving conditions encountered by the vehicle. The AFLS operates in different modes, viz. Expressway Mode, Country Mode and Town Mode. The developed prototype AFLS ECU has been integrated with a Utility Vehicle's Electrical & Electronic architecture via CAN network to achieve these modes.

These AFLS modes are achieved with less sensor inputs as compared to the similar solutions available in the market, on existing mid-segment utility vehicle architecture. The vehicle speed thresholds are optimized to meet the Indian traffic requirement.

With this AFLS technology development, ARAI is now able to offer the following development services in automotive lighting.

- Functional Architecture Development
- Control Algorithm development for Intelligent Lighting Technologies
- Software development using MATLAB & Simulink/ C
- Verification and Validation Methodologies
- Consultancy for AFLS development and new technologies in the area of lighting

ARAI is also keen to develop similar AFLS technologies for 2&3 wheel vehicles, Buses, Commercial vehicles, off-road vehicles and Construction & Mining equipment/vehicles as well.

Beneficiary Industry

- Vehicle Manufacturers of 2W, 3W, Cars, SUV/MPV, Buses, Commercial Vehicles etc.,
- Lighting Systems Manufacturers supplying to vehicle OEMs
- Off road vehicles and Construction & Mining equipment/vehicles

The Automotive Research Association of India

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