Real Drive Emissions

Status Update from India

Indian Delegation
27th / 28th Nov 2018
2nd RDE IWG Meeting
Venue: European Commission, Brussels
The Need - Key Motivators in India

Global Influences

- Differences in Test Lab vs Road Results
- The issue of Test Cycle Recognition / Defeat Devices.
- Ambient Air Quality Issues (NOx Hotspots in EU Cities)

Drivers in India

- Ensure that Real Drive Emissions remain within Compliance Limits with reference to Lab Emissions
- Improving Ambient Air Quality in Major India Cities by achieving National Air Quality Guidelines

A Need to have a Test Protocol for evaluating Emissions in Real Driving Conditions in India
Indian RDE Status - Overall Summary

First Announcement - Ministry of Road Transport & Highways, Govt. of India

Govt. Notification, GSR 889(E), dtd. 16th Sep 16

During type approval and COP applicable from 1st April, 2020, real world driving cycle emission measurement using PEMS shall be carried out for data collection and from 1st April, 2023 real world driving cycle emission conformity shall be applicable.

Indian RDE Formulation - Highlights

- Test Procedure for Light Duty Vehicles
- Dec 16: Technical Committee Constituted
- Feb 17: 1st IRDE Committee Meeting
- Oct 17: 5th IRDE Meeting - EU 3rd Package considered as Baseline for Indian RDE
- Nov 18: 12th IRDE Meeting - In Principle Agreement on key Items Indian RDE

Progress Till Date

- Temperature / Altitude Boundary Conditions – Completed
- Speed Bins /Trip Share /Duration – Completed
- Driving Dynamics Criteria - Completed
- Post Processing- Completed
- Drafting – In Progress (Expected Completion – Dec 18)

Key Items of Indian RDE have been finalized. Regulation Drafting in progress. Expected Completion within Dec 2018.
Basic Approach – Indian RDE

Key India Specific Adaptation

- Ambient Temperature

- Speeds
  - Low Speed in Indian Cities / Highways.
  - Maximum Speeds Lower in India
  - Typical Indian Vehicles (Small Engines / Low PMR)

- Driving Dynamics
  - Typical Traffic Conditions in India Cities / Highways
  - Typical Indian Vehicles (Small Engines / Low PMR)

- Data Post Processing
  - Based on Type-1 Test (MIDC)
  - Adaptation of other Factors for Post Processing

Methodology Adopted

- Indian Climate Data (15 Year Monthly Avg. Data with correction for Regional & Seasonal Extremes)

- Data Collection on Indian Roads in different Cities & Speed Distribution Analysis

- V*Apos & RPA Scatter based on Data Collection on Indian Roads considering Usable Acceleration Potential.

- Adoptions for using MIDC (2-Point Post Processing & Validation for CO2 Correction Factors, Normality and Completeness)

Indian RDE is mainly based on EU 3rd Package with Adaptations for India
Indian RDE Development: Snapshot

- Over 60 vehicles evaluated across various categories (M1, N1 & Low powered M1 & N1)
- Across Various Regions (North, West and South India) in different seasons
- Approx. 10,000km of Road Tests done.
- 12 IRDE Committee Meetings and Over 50 Expert Group Meetings & Telecoms
- Around 2 years of Work since commencement of activities from Jan 2017

Examples of Test Routes:

- Chennai
- Delhi
- Pune
Future Actions

IRDE Regulation Fix (Final Document)

EFM Accuracy Study (Low Exhaust Flow)

EFM Accuracy Study (Exh. Pulsation-1/2 Cyl. Engines)

Effect of High Temperature (Measurement Accuracies > 40 Deg C)

Overall Assessment (PEMS Accuracy in Indian Conditions)

Overall Assessment (Success Rate-Test Validity as per IRDE)

Error Margin & Conformity Factor Evaluation

IRDE Implementation Timelines are already fixed. Conformity Factor Decision expected at beginning of the Monitoring Phase – Plan under discussion.
Thank You