Towards
Improved Vehicular Safety on Road
&
Roadworthiness of In-Service Vehicles

Balraj Bhanot
Chairman TEDC(BIS)
Adviser Rosmerta Technologies Ltd.

Former
Director ARAI & DDG (D/O HEAVY INDUSTRY)
Chairman CMVR – Technical Standing Committee (MoRT&H)
Road Accidents – Global Scenario

- Road traffic crashes take the lives of nearly 1.3 million people every year, and injure 20–50 million more.
- Road traffic injuries have become the leading cause of death for people aged 15–29 years.
- Over 90% of road traffic deaths and injuries occur in low-income and middle-income countries, which have only 48% of the world’s registered vehicles.
- Nearly half (46%) of those dying on the world’s roads are “vulnerable road users”: pedestrians, cyclists and motorcyclists.
- In addition to the grief and suffering they cause, road traffic crashes result in considerable economic losses to victims, their families, and nations as a whole, costing most countries 1–3% of their gross national product.
- Without action, road traffic crashes are predicted to result in the deaths of around 1.9 million people annually by 2020.
- Only 15% of countries have comprehensive laws relating to five key risks: speeding, drinking and driving, and the non-use of helmets, seat-belts and child restraints.

(Source: Decade of Action 2011-2020, World Health Organization)
CAUSES OF ROAD ACCIDENTS IN INDIA

Within the cause of driver accidents, excessive speeding accounted for 58% of the accidents and 60% of the fatalities.
In India, during the year 2014, there were around 4.89 lakhs road accidents which killed about 1.40 lakh people and injured more than 4.93 lakh persons in India. The analysis of road accident data 2014 reveals that about 56 accidents resulting in death of 16 lives every hour takes place.

Source: MoRTH
India is experiencing one of the highest motorization growth rate in the world accompanied by rapid expansion in road network and urbanization over the years. Rapid expansion in road network, motorization and urbanization in the country has been accompanied by a rise in road traffic accidents resulting into injuries, fatalities, disabilities and hospitalization with severe socio-economic costs across the country. Road safety has become an issue of concern at national as well at the international level.
Projections as per AMP 2006-16
All Vehicles: 31.9 million

Source: SIAM and IBEF Presentation on Automotives, Nov’10
Compliance to RULE 62
## Items to be covered

### Tests as per CMVR 62
- Headlamp
- Bulbs
- Reflectors & Reflective Tapes
- Rear View Mirror & Side Mirrors
- Safety Glass/Windscreen
- Windshield Wipers & Washers
- Steering Gear
- Speedometer
- Braking System
- Exhaust Emissions
- Dashboard Equipments & Warning Lights
- Silencers
- Horn
- Other Lights/Front & Rear Fog lamps/Top Lights
- Rear Under Run Protection Device (RUPD)
- Lateral Under Run Protection Device (LUPD)

### Additional Tests
- Speed Governor
- Suspension Test
- Side slip Test
- Joint Play Test
- Registration Plates
- Embossment of Chassis Number & Engine Number
- Tyres
- Safety Belts
- Signaling Devices (Switch), Hazards, Direction Indicators, Stop lights, Side Lights, Number Plate lights
- Condition of Chassis
- Front Under Run Protection Devices (FUPD) and Bumper Bars
- Engine & Transmission Mountings
- Oil leaks & Cooling System
- Wings, Wheel Arches and Spray Suppression
Inspection and Certification
VEHICLE TESTING – PRESENT SCENARIO

• Every year a fitness certificate is issued, for the roadworthiness to all public service or commercial vehicles running on the road by the Transport department (RTO office) as per rule 62 of CMVR.

• The fitness tests are presently based completely on visual inspection only.

• There are certain critical parameters related to safety and emissions which need be checked thoroughly by specialised equipment installed only at Inspection and certification lanes called I&C lanes.
VEHICLE TESTING – PRESENT SCENARIO

• Due to absence of I&C lanes network in the country existing vehicles on road pose a great threat to public safety and environment at large.

• The new vehicles are extensively tested from point of view of safety at manufacturer’s end. However, in use vehicles continue to run on road without consideration for safety of public or mitigation of pollution in environment.
VEHICLE TESTING – PRESENT SCENARIO

THE SOLUTION IS: Vehicle Test Lane

• The solution to the above problem is to set up network of the Vehicle Test Lanes all over the country where all the vehicles (HCVs, LCVs, MCVs, cars, taxis, 3 wheelers and even 2 wheelers) can be tested for fitness parameters like Brakes, Headlight, Suspension, Alignment, Pollution, Speedometer along with under-pit under carriage inspection apart from visual inspection on scientific parameters.

• All the test data to be stored in the computer data base, to be analysed for corrective actions.

• This will ensure movement of safer and environment friendly vehicles on road besides bringing concept of End of Life of a vehicle on road as prevalent in rest of the advanced world.
Automated Vehicle Fitness
Testing Station
A way forward for Setting
End of Life of Vehicle
WHY I&C???

✓ **Vehicle Testing- Present Scenario:** Currently, for the roadworthiness to all public service or commercial vehicles running on the road, every year a fitness certificate is issued by the Transport Department (RTO) based on the Visual Inspection only as per Rule 62 of CMVR, which are subjective in nature.

✓ Therefore to eliminate the subjectivity in the existing practice and to bring in more objective practice, **Inspection & Certification (I&C) programme** is required to be implemented which includes a combination of both **Visual** (having pre-defined guidelines) and **Automated tests for Brakes, Suspension, Speedometer, Emissions etc.**

✓ This I&C programme will ensure safer & environment friendly movement of vehicles on road. Also it will help in bringing the concept of “**END OF LIFE**” of a vehicle on road which is as of now absent in our country.
### 1. Emission Tests with Automated Equipment

<table>
<thead>
<tr>
<th>Vehicles</th>
<th>Test</th>
<th>Equipment Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel</td>
<td>Free Acceleration Test</td>
<td>Opacimeter</td>
</tr>
<tr>
<td>Petrol/CNG/LPG</td>
<td>Idle Test</td>
<td>4 Gas Analyzer</td>
</tr>
</tbody>
</table>

### 2. Safety Tests with Automated Equipment

<table>
<thead>
<tr>
<th>Test items</th>
<th>Tests</th>
<th>Equipment Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speedometer</td>
<td>Speedometer Test</td>
<td>Speedometer tester</td>
</tr>
<tr>
<td>Side Slip</td>
<td>Side Slip Test</td>
<td>Side Slip tester</td>
</tr>
<tr>
<td>Suspension</td>
<td>Suspension Test</td>
<td>Suspension tester</td>
</tr>
<tr>
<td>Service Brakes</td>
<td>Brake test</td>
<td>Roller Brake tester</td>
</tr>
<tr>
<td>Parking Brakes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Headlight</td>
<td>Headlight Test</td>
<td>Headlight tester</td>
</tr>
<tr>
<td>Horn</td>
<td>Horn Test</td>
<td>Sound Level Meter</td>
</tr>
</tbody>
</table>
Visual Inspection

Visual items to be checked as per Rule 62 of CMVR are Spark Plug/Suppressor Cap/High Tension Cable, Rear View Mirror/Side Mirror, Safety Glass/Windscreen, Horn, Dashboard Equipment, Warning Lights, Windscreen wipers and washers, Speedometer, RUPD, FUPD, LUPD, Fog Lamps, Top Lights, Parking Lights, Number Plate Lights, Stop Lights, Direction Indicators, Hazards Light, Body Marking Lights, Steering Gear, Braking System, Silencer, Reflectors & Reflective Tapes, Headlamp.

Visual Inspection to be carried out as per Rule 62 of CMVR with pre defined parameters to be checked e.g. for Windscreen following parameters are to be checked as shown:

<table>
<thead>
<tr>
<th>Safety Glass/ Windscreen</th>
<th>Loose fitting</th>
<th>Vision obstruction caused by excessive stickers/object dangles etc.</th>
<th>Scratches on the windscreen</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Screen damage</td>
<td>Fittings loose or damaged</td>
<td>Stone chip damage in the drivers view area i.e. more than 5 mm diameter</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Improper fitment as specified in rules &amp; regulations</td>
<td>Toughened glass is fitted instead of laminated safety glass in the front windscreen</td>
<td>Not of standard marking of laminated safety glass</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tinted films fitted on the glass</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Inspection Interval Examples in Different Countries

0/1 = inspection at first registration and then every year
4/2 = inspection 4 years after first registration and then every 2 years

<table>
<thead>
<tr>
<th>Country</th>
<th>Private cars</th>
<th>HGVs &gt; 3500 kg</th>
<th>Trailers &gt;3500 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>0/3/2</td>
<td>0/1</td>
<td>0/1</td>
</tr>
<tr>
<td>Singapore</td>
<td>3/2/1</td>
<td>1/1/0.5</td>
<td>1/1/0.5</td>
</tr>
<tr>
<td>Belgium</td>
<td>4/1</td>
<td>0/0.5</td>
<td>0/0.5</td>
</tr>
<tr>
<td>Denmark</td>
<td>4/2</td>
<td>0/1</td>
<td>0/1</td>
</tr>
<tr>
<td>Finland</td>
<td>3/2/1</td>
<td>1/1</td>
<td>1/1</td>
</tr>
<tr>
<td>Germany</td>
<td>3/2</td>
<td>1/1</td>
<td>1/1</td>
</tr>
<tr>
<td>Great-Britain</td>
<td>3/1</td>
<td>1/1</td>
<td>1/1</td>
</tr>
<tr>
<td>Netherlands</td>
<td>4/2</td>
<td>1/1</td>
<td>1/1</td>
</tr>
<tr>
<td>Spain</td>
<td>4/2</td>
<td>1/0.5</td>
<td>1/0.5</td>
</tr>
<tr>
<td>Israel</td>
<td>0/2</td>
<td>0/1</td>
<td>0/1</td>
</tr>
<tr>
<td>New Zealand</td>
<td>0/0.5</td>
<td>0/1/0.5</td>
<td>0/1/0.5</td>
</tr>
</tbody>
</table>

Source: CITA General Questionnaire
MORTH INITIATIVE TO SETUP 10 PILOT I&C CENTERS
Initiative By MoRTH: -

To improve Roadworthiness Safety and emissions for in-use vehicles on Road, Ministry of Road Transport and Highways (MoRTH) has initiated a pilot project to setup 10 Inspection & Certification centers (I&C) in different states in first phase to be implemented by M/s Rosmerta Technologies Limited.

Locations of the 10 I&C Centers are:-

<table>
<thead>
<tr>
<th>S.No</th>
<th>State</th>
<th>City</th>
<th>Executive Agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Maharashtra</td>
<td>Nasik</td>
<td>ARAI</td>
</tr>
<tr>
<td>2</td>
<td>Karnataka</td>
<td>Bengaluru</td>
<td>ARAI</td>
</tr>
<tr>
<td>3</td>
<td>Rajasthan</td>
<td>Railmagara (Rajsamand)</td>
<td>ARAI</td>
</tr>
<tr>
<td>4</td>
<td>Gujarat</td>
<td>Olpada-Surat</td>
<td>ARAI</td>
</tr>
<tr>
<td>5</td>
<td>Andhra Pradesh</td>
<td>Malkapur-Hyderabad</td>
<td>ARAI</td>
</tr>
<tr>
<td>6</td>
<td>Madhya Pradesh</td>
<td>Chhindwara</td>
<td>SIAM</td>
</tr>
<tr>
<td>7</td>
<td>Haryana</td>
<td>Kaneheli- Rohtak</td>
<td>ICAT</td>
</tr>
<tr>
<td>8</td>
<td>NCT of Delhi</td>
<td>Jhul-jhuli, Gumanhera</td>
<td>ICAT</td>
</tr>
<tr>
<td>9</td>
<td>Uttar Pradesh</td>
<td>Lucknow</td>
<td>ICAT</td>
</tr>
<tr>
<td>10</td>
<td>Himachal Pradesh</td>
<td>Taradevi-Shimla</td>
<td>ICAT</td>
</tr>
</tbody>
</table>
10 Model Test Centers to be established in following states

- Haryana
- Rajasthan
- Gujarat-Surat
- Maharashtra-Nasik
- Himachal Pradesh
- National Capital Region
- Uttar Pradesh
- Madhya Pradesh-Chhindwada
- Andhra Pradesh-Hyderabad
- Karnataka-Bangalore

- Centers to be facilitated by ARAI
- Centers to be facilitated by NATRIP
- Center to be facilitated by SIAM
Vehicle Testing Center  NASHIK
Chhindwara site:
I&C Center- Surat (Gujarat)
ROHTAK SITE
I&C Center- Kanheli (Rohtak)
DELHI SITE
I&C Center - Jhul-jhuli (Delhi)
RAILMAGRA  RAJASTHAN SITE
I&C Center- Railmagara (Rajasthan)
I&C Center- Bengaluru
BANGALORE
Prince Michael International Road safety Award

Barcelona Award for Automotive Innovation

Golden Peacock National Award for Quality

SAE Award for Environmental Excellence
THANKS FOR YOUR Patience