Indian Certification System

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Out-line of Presentation

➢ About ARAI

➢ Highlights of Indian Type Approval System

➢ International Cooperation

➢ Export Homologation services

➢ Laboratory Accreditation

➢ Special support for Australian Approval
Establishment : 1966
Location : Pune, INDIA (150 km from Mumbai)
Manpower : 600+
Post Graduate Academy
Forging Industry Division

Our Representative : China, Korea and Chennai
Accreditations : ISO 9001, 14001, OHSAS 18001 & NABL (ISO- 17025)
ARAI's Activities

R&D: Automotive Industry Projects, National Interest Projects and Internal R&D Projects

Certification Testing / Homologation

Assisting Govt. of India in Formulation of Regulatory Standards and Harmonization of Regulations

Education and Training

Consulting Services
**Automotive Electronics**
  - Design solution using model based design – rapid prototyping for proof of concept.
  - Design to product level solutions.
  - Evaluation services and design solutions for EMI/EMC/Environmental.

**NVH Refinement of Vehicles and subsystems & CAE**
- Benchmarking and Target setting.
  - Pass – by – noise Measurement
  - Interior NVH Assessment
- Development of Acoustic Material Modal Analysis.
- NVH mapping of tyres, brakes, power train etc.
- Durability Analysis Using Virtual Road Load Data Acquisition & Virtual Simulation of entire vehicle

**Engine**
- New Engine Development: Concept – to – Prototype
- Alternate fuels – CNG, LPG, Ethanol, Bio – Diesel, Hydrogen blend, etc.
- Transmissions design, matching.
- CFD, Thermodynamic simulation of engine processes.
- Durability tests and Bench Marking

**Vehicle Dynamics ,Structures and Materials**
- Vehicle design / development for durability/reliability/comfort.
- Service load data acquisition on Indian roads.
- Compressing vehicle development time.
- Laboratory/virtual simulation.
- Correlation of Indian roads to proving tracks.
- Design and development of suspension using H-I-L technology.
Indian Type Approval System: Current ad Future Regulations
Regulatory Mechanism

Notification Agencies

- MORTH: Ministry of Road Transport & Highways
- MOHI: Ministry of Heavy Industries & Public Enterprises
- MOEF: Ministry of Environment & Forests
- Ministry of Consumer Affairs
- DGFT: Director General of Foreign Trade
- State Ministries

Standards Making Bodies

- CMVR-Technical Standing Committee
- Automotive Industry Standards Committee-AISC
- Standing Committee on Emission Legislation-SCOE
- Bureau of Indian Standards-BIS

Type Approval/ Certification agencies

- ARAI
- Other Test Agencies Notified under Rule 126
Automotive Sector- Technical Regulations

- Import Regulations
- 3rd Party Certification
- Audit/ Surveillance Checks
- Conformity of Production

Regulatory Compliance
Provisions in MVA (Enablers, intensions, powers)

Specific Rules under CMVR (Applicability, implementation schedules, specific provisions)

Approval Procedures, Test standards, passing limits and other technical requirements (AIS/IS standards, Emission Test Procedures, etc)
**Power to make Rules under Motor Vehicle Act**

### Section 110
(Power of Central Govt.)

Central Government may make rules regulating the contraction, equipment and maintenance of motor vehicles with respect to specified list.

### Section 111
(Power of State Govt.)

A State Government may make rules regulating the contraction, equipment and maintenance of motor vehicles with respect to all matters other than specified under Section 110.
Role of ARAI in Regulatory Matters

• Technical Secretariat for national level committees (CMVR-TSC, SCoE and AISC)

• Director – ARAI is Chairman of Safety Standards Committee (AISC)

• Secretariat for National Standing Committee on WP.29 matters and its 6 working groups

• Technical Advisor to government agencies

• Important member of BIS committees

• Director-ARAI is elected as Vice-Chairman of GRPE (Working Group on Pollution and Energy) under UNECE WP.29
Features of Type Approval System

• 3rd Party Type Approval system is similar to ECE
• Implemented in year 1991
• TA administration Agencies
  ➢ Notifying agencies: MoRTH, MoEF, etc.
  ➢ Standards and other requirements are notified under CMVR
  ➢ Testing agencies: ARAI, CIRT, VRDE, IIP, ICAT & in future, other centers under NATRiP
  ➢ TA certificates: Issued by Testing Agencies
  ➢ Vehicle level CoP for Emission. Components CoP as per AIS 037 for the notified components

• TA standards
  ➢ Bureau of Indian Standards (BIS) prepares IS standards
  ➢ AISC Technical committee prepares AIS standards as an interim step
  ➢ Emission Standards (TAP 115/116)

• Roadmap of Regulations
  ➢ Agreed by industry, test agencies and government
  ➢ Policy to align with ECE regulations to the extent possible
Test Agencies

• Under CMVR, testing and approval authority rests with Test Agencies. These agencies:
  - Carry out Type Approval and CoP Testing
  - Issue Type Approval and CoP Certificates

• 7 Agencies are:
  • ARAI (Automotive Research Association of India, Pune)
    • Under Ministry of Heavy Industries
  • VRDE (Vehicle Research Development Establishment, Ahmednagar)
    • Under Ministry of Defence
  • CIRT (Central Institute of Road Transport, Pune)
    • Under Ministry of Road Transport & Highways
  • IIP (Indian Institute of Petroleum, Dehradun)
    • CSIR Laboratory
  • CFMTTI (Central Farm & Machinery Training & Testing Institute, Budni)
    • Under Ministry of Agriculture
  • ICAT (International Center for Automotive Technology, Manesar)
    • Under Ministry of Heavy Industries
  • NRFMTTI (Northern Region Farm Machinery Training & Testing Institute, Hissar)
    • Under Ministry of Agriculture
Vehicles Covered under Type Approval

Indian Automobile Industry

- Light Pass. Vehicles
  - PCs / MUVs / SUVs
- Commercial Vehicles
  - LCV’s / M&HCVs / Buses
- Tractors
  - Farm / Earthmoving & Construction Equipments
- Two Wheelers
  - Motorcycles / Scooters / Mopeds
- Three Wheelers
  - Passenger Carriers / Goods Carriers
Type Approval of Vehicles

- CMV Rules **91 to 126** specify technical requirements related to testing and approval of vehicles.

- Rules **127 to 137** specify Special Provisions

- Indian system is similar to European System of TA and COP

- The testing standards and rules are revised from time to time to address:
  - Introduction of new technology
  - New safety/ emission requirements
  - Tightening of existing passing limits
  - Changes in the testing and approval procedures

- Vehicle manufacturers are responsible for
  - Obtaining Type Approval Certificate for new model
  - Continued compliance of running models
Rule 126: Prototype of every motor vehicle to be subject to test

- Effective on and from 1993
- Every manufacturer or importer shall submit prototype for testing and approval
- All motor vehicles (other than trailers and semi-trailers) need approval
- Test agencies are authorized to issue TA
- Procedure for TA shall be as per AIS 017-2000 as amended from time to time.

Rule 126 B: Prototype of every CEV to be subject to test

- Effective on and from 2000
- Every manufacturer or importer shall submit prototype for testing and approval
- All CEVs need approval
- Test agencies are authorized to issue TA
- Procedure as laid down in CMVR and as amended from time to time.
Rule 126 A: Conformity of Production

- Test agencies shall carry out tests on vehicles drawn from production line
- Procedure as specified under CMVR
- Vehicles shall confirm to rules made under Section 110 of Act
- Applicable for emission testing at the moment
- Minimum frequency of once in year

Rule 124 Safety Components

- TA and CoP as per AIS 037
- Applicable in phased manner for notified components
Other Requirements

• **Special Provisions**
  – Tourist vehicles other than motor cabs, etc. (Rule 128)
  – M3 vehicles (Rule 128-A)
  – Transportation of goods of dangerous or hazardous nature (Rule 129)
  – Signals and additional safety measures for motor vehicles (Rule 138)
Safety Standards in Future

2 wheelers
- Electromagnetic compatibility (EMC)
- BS IV emission

3 wheelers
- Electromagnetic compatibility (EMC)
- Driver seats
- Passenger safety

4 wheelers: M1 Category
- Advanced Braking System
- Head on, offset frontal and side crash
- Head restraints with controlled back-set
- Electromagnetic compatibility (EMC)
- Child Restraint
- Vehicle alarm system & protection against unauthorized use
- Hybrid vehicles
Safety Standards in Future

**4 Wheelers- Buses**
- Bus code
- School bus
- Sleeper coaches
- Protection against unauthorized use
- Electromagnetic compatibility (EMC)
- Hybrid vehicles
- Fire protection
- Advanced Braking Systems

**4 Wheelers- Goods vehicles**
- Truck code
- Automotive trailer code
- Rear marking plates
- Protection against unauthorized use
- Electromagnetic compatibility (EMC)
- Close coupling and mechanical coupling devices
- Advanced Braking System
- Retro-fitment of under-run protection devices on in-use vehicles

**Agriculture Tractors**
- Agriculture Trailer Code
- Rear vision
- Field of vision
- Attendant/passenger seat
- Ballast mass
- ROPS
- Mechanical coupling
- Tractor identification number
- Symbols and color codes
Passive Safety Standards

AIS 096 (Frontal Crash) AIS 098 (offset) and AIS 099 (side Crash)

• 3 Years (new models) 6 years (running models) after readiness of facilities

AIS 100 (Pedestrian Protection)

• Along with Crash standards?

AIS 072 (Child Restraint)

• October 2014?/ April 2015?

ABS Fitment on additional categories

• April / October 2015?

AIS 100 (Rear Impact)

• Implementation date is not decided
Active safety and General Safety

AIS 071 (Controls tell tales)
- March 2014

AIS 004- Part 3 (EMC)
- October 2015

IS 11827:2008 (Speedometer)
- April 2014

Anti-theft devices (AIS 075) and Vehicle Alarm Systems (AIS 076)
- April 2015?
Several standards (AIS and IS) are recently revised. These are under notification and will be implemented in next 2/3 years. These revisions are on account of:

- Changes in test procedures
- Changes in scope
- Alignment with UN regulation/s or GTRS
- Inclusion of new technology alternatives

**Photometry**
- AIS 057 Rev 1 (Retro-reflectors)
- AIS 034 Rev 1 (Bulbs)
- AIS 010 Rev 1 (Performance-Lighting/light signaling)

**Rear View Mirrors**
- AIS 001 Rev 1 (Mirrors)
- AIS 002 Rev 1 (Installation)

**Alternate Fuels**
- AIS standards will be replaced by IS standards
What is new coming up?
Draft Standards

Following standards are in advanced stage of approval:

- Revised IS 15139: Seat belt Anchorages
- AIS 120 - External Projection-Alignment with R 26
- Draft Notification is issued
- AIS 123 - Retrofitment of Hybrid kits
- Revised IS 2553: Safety Glazing
- New Norms for Quadricycles
- Revised IS 15546: Seats, anchorages
- Draft SO Notification will be issued
Following activity is taken up in Standards Committees

- **Revision of AIS 38 to 41, 102**
  - For BoVs/hybrids
  - Alignment with UN regs
- **Camper Van**
  - New standard for OEM and rebuilding
- **Scheme is being proposed**
- **ELV standard**
- **Amendments in AIS 110**
  - Provisions for TPMS
- **Revision of IS 11852**
  - Brakes: New technical requirements
- **Voluntary code on Vehicle Recall**
  - Draft Proposal is under discussion
## Construction Equipment Vehicles Type Approval

### Component level performance
- Bulbs and Lamps
- Lighting/ signalling devices
- Hydraulic Brake hose & fluid
- Wheel nut & hub cap
- Safety Glass
- Horn
- Component Type Approval & CoP

### Vehicle Level
- Brakes
- Steering gear
- Turning circle diameter
- Maximum speed
- Lighting/ signalling devices
- Reflectors/ indicators
- Speedometer
- Sound level
- Rear View mirror

### Emission and other
- Engine emission
- Overall dimensions
- Tyres
Agriculture Tractors: New requirements in near future

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<th>Beyond</th>
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<tr>
<td>• Load Platform</td>
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<td>• Attendant Seat</td>
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<td>• Field of vision</td>
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<td>• Rear view mirror</td>
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<td>• Controls/ Tell tales</td>
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Future alignment with EEC:
- EMC
- Seat Belts and anchorages
- Spray suppression system
- Lateral protection
Trailers

• Existing system: Design Approval of Trailers and Registration Rules of State Authorities

• Forthcoming requirements:
  – Automotive Trailers and Agriculture Trailers will have to be Type Approved.
  – AIS 113 (Automotive Trailer Code) and AIS 112 (Agriculture Trailer Code) will be soon notified
  – Modular Hydraulic Trailers and Special Purpose Trailers will be covered by separate notifications
Future Emission Standards

- **Fuel Efficiency norms?**
  
  Draft Notification is under preparation. Norms will be based on Corporate Fleet Average (similar to EU norms). Presently only M1 will be covered

- **BS IV- Country-wide?**
  
  At this moment 13 cities are notified. Additional 20 cities will be soon notified

- **BS IV- 2 W**
  
  Draft Notification is issued

- **Uniform Fuel Specifications?**
  
  BS IV will come across the country shortly (expected by 2016-17)

- **BS V-?**
  
  National Level Committee is examining the possibilities

- **CEVs- Next stage norms?**
  
  Same committee will examine the possibilities
International Cooperation
Indian Counterparts

- **Standing Committee** on WP.29 was formed in **February, 2003** under the **Chairmanship of J.S., MoRTH**
- **ARAI** was appointed as **National Secretariat**
- **6 Working Groups** are identified to deliberate on technical subjects under consideration in respective GR groups
- Delegations are sent for participating in relevant meetings
- **Indian views** are sent on various regulations/ GTRs that are under consideration
- The valuable experience gained in WP.29 participation is used while **upgrading our national standards**
India’s Position

- Active participation in WP.29 & GR meetings

- Signatory to 1998 agreement under which GTRs (Global Technical Regulations) are being formulated

- India is not a signatory to 1958 agreement

- Our national standards are being updated for alignment with ECE regulations or GTRs
Export Homologation services
ARAI’s Cooperation with Other Countries

Singapore
Accreditation of ARAI Labs by Singapore Transport Authorities

South Africa, Australia and Brazil
Similar initiative is taken for obtaining accreditation. 2 wheeler and 3 wheeler industry is already using ARAI reports for SA.

Korea
Official Representative of ARAI in Korea supports the component manufacturers for Indian Homologation

China
Technical support is provided for testing and approval for Indian market
  • Automotive and Genset engines
  • Components and assemblies
  • Vehicles

EU Countries
Component and vehicle type approval on regular basis

The Netherlands
Approval Authority of Netherlands has authorized ARAI to carry out CoP audits on their behalf
Homologation services offered and benefits to Industry

Use of ARAI test facilities

- Witness testing by overseas approval authorities
- Combining export tests with domestic TA test schedules

Granting Test Reports

- ARAI Test Reports/ approval as per ECE/ EC are accepted by some countries
- Discussions are initiated with several other authorities for similar arrangement
- ARAI Test Reports/ approval as per CMVR are also accepted by some neighboring countries
Homologation Experience in last 2 decades

Our customer sectors

- Engines
- Agriculture Tractors
- CE Marking
- E marking
- 2 wheelers
- Passenger cars
- Commercial Vehicles
Laboratory Accreditation
• **National Accreditation Board of Testing & Calibration Laboratories (NABL)** is authorized by Govt. of India

• It is a Body under Dept. of Science and Technology, GoI

• Accreditation is granted as per ISO 17025

• India is a signatory to ILAC/ APLAC MRA
Quality Management System of ARAI

Integrated Management System

- Customer Focus
  - ISO 9001
- Environmental Focus
  - ISO 14001
- Technical Capability
  - ISO 17025
- Occupational Health & Safety
  - OHSAS 18001
NABL- ISO 17025 Laboratory Accreditation of ARAI:
Testing

Overall Scope of Accreditation

- Testing:
  - Mechanical
  - Electro-technical
  - Photometry
  - Chemical

Domestic Testing Services
- All mandatory tests under CMVR
- Component tests as per IS, ISO, ASTM, AIS etc.
- Material, fuels & additives testing

Export Homologation Tests
- Component tests as per CISPR, ISO, SAE, JIS, IEC, IP, etc.
- Respective Tests as per UN-ECE, EEC, EPA, FMVSS, etc.

Now Accreditation will also cover ADRs
Special support for Australian Approval
• Tests can be carried out as per ECE/ EC regulations or as per ADRs at ARAI

• All facilities are available under one roof for:
  – 2 wheelers
  – Passenger vehicles
  – Goods vehicles
  – Components

• Equivalent tests as per ADR are also being covered under NABL accreditation

• ARAI being ISO 17025 accredited, the need for test facility Inspection can be minimized

• Risk Based Audit frequency could be reduced
Approval Support

• Data base of Approvals granted by ARAI can be created and updated from time to time

• Such data base can be shared with Australian authorities

• Indian Manufacturers can also be given access
Surveillance Support

• Periodic testing can be done for product conformance

• Component level or Vehicle level CoP procedure can be established
Regulations Support

• A channel can be establishing with AISC Secretariat at ARAI to track changes in ADRs

• Indian manufacturers can be given access to this special service on ARAI web-site

• Regular interactions could be held between the regulatory bodies of 2 countries
## ADRs and Test capability at ARAI

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Thank you!