STRATEGIC ROAD MAP

TRANSPORT ENGINEERING DIVISION COUNCIL (TEDC)

Transport Engineering Division Council (TEDC) is responsible for Standardization in the field of transport engineering including air, water, road and rail transport; diesel engines for stationary application, freight containers, transport packaging, etc.

The broad sectors in which the standardization of TEDC can be classified are :

1. Automotive components and systems,
2. Shipping and Maritime,
3. Packaging and Material Handling
4. Unmanned Aerial Vehicles(UAV)
5. Bicycles
6. Vehicles running on green energy
7. Intelligent Transport System

The Strategic Roadmap for standardization in the above sectors for the next five years is as follows :

1. Automotive components and systems

The automobile sector of India is one of the largest in the world and accounts for over 7.1% of India's gross domestic product (GDP). It also contributes to nearly 22% of the country's manufacturing GDP.

As per the Automotive Mission Plan (AMP) 2016-26, the growth of vehicles particularly the passenger vehicles is expected to triple to 9.4 million units per annum by 2026. The automobile sector in India has immense potential for driving economic growth and employment and also supporting a host of other manufacturing industries like auto-components, machine tools, steel, aluminum, plastics, chemicals, electronics, etc. In addition, the auto sector also supports the services sector which include IT and software, banking, insurance, repair and maintenance, transport and logistics including public transport etc.

The Standardization in the Automotive Sector needs to support the major programme/plans initiated by the Government of India such as, Faster Adoption and Manufacturing of (hybrid &) Electric Vehicles (FAME), National Automotive Testing and R&D Infrastructure Project (NATRiP), Green Urban Transport Scheme (GUTS) and National Electric Mobility Mission Plan (NEMMP) 2020.

As the fastest growing economy in the world, India is at the centre of a massive mobility transformation. The new norm will be Autonomous/ Safe, Connected, Electric and Shared mobility. The future, hence, lies in driving a comprehensive approach to standardization to support inclusive, sustainable and transformational mobility.

In view of the above, following priority areas for standardization are identified for standardization during the next 5 years in the automotive field :

- Standardization on Transmission Systems like testing for performance and durability
- Standardization on Automation and Communication with Engine due to increased Digitalization.
- Standards on Vehicle Noise measurements and standards on vehicle dynamics.
- Standardization related to tyres to meet BS VI norms
- Standardization of E-vehicles tyres
- Standardization of Tyre Pressure Monitoring System
- Environmental concerns related to emission of particulate matters arising of tyre wear to be referred to concerned PCD Committee for action at their end.
- Standardization of Double Bollards
- Standardization related to Inspection & Certification of Vehicles
- Brake systems (BAS / AEBS etc.,)
- Automatic Braking
- Automated command steering function
- CRS in Buses
- Tachograph,
- Electric vacuum pump
- Electronic Power Steering System

2. Shipping and Maritime Sector

As far as the Indian subcontinent is concerned, shipping plays an important role in the transport sector of India's economy. Approximately, 95 percent of the country's trade by volume (70 percent in terms of value) is moved by sea. India will require a vibrant and strong maritime industry for economic & strategic reasons. The 'Make in India' initiative offers tremendous opportunities in the maritime sector, particularly in the shipbuilding and ship repair industry.

The Government of India has planned to modernise the country's ports through a project called Sagarmala. Sagarmala is the flagship programme of the Ministry of Ports, Shipping and Waterways (MoPSW) to promote and develop ports in the country by harnessing India's 7,500 km-long coastline and potentially navigable waterways. Sagarmala, can be a game changer for the maritime sector, due to its focus on port-led development.

Following areas will need immediate attention for standardization during the next 5 years' time-frame :

- Specifications on design and selection of sorbents
- Management and handling of shipboard garbage
- Safety valve for cargo tanks of LNG carriers - Design and testing requirements
- Terms & definitions , Installation, Inspection and Maintenance of Container Securing Devices for ships
- General and structural requirements along with test specifications of Marine Cranes.
- Cathodic protection of ships from corrosion.
- Bulk carriers — Construction quality of hull structure

- Construction and dimensions of housing for lifebuoys
- Plate with instructions for rescue, resuscitation and first aid for drowning persons
- Manually and Power-operated coupling devices for rope connections of pushing units and coupled vessels - Safety requirements
- Providing adequate port reception facilities; Shore power supply to visiting ships; Promotion of Methanol/Battery/LNG operated short sea shipping
- Design, location and use of shipboard safety signs, fire control plan signs, safety notices and safety markings
- Breathing apparatus for ships - Emergency escape breathing devices (EEBD) for shipboard use
- Breathing apparatus for ships- Self-contained breathing apparatus for shipboard firefighters
- Shipboard fire-fighters' outfits (protective clothing, gloves, boots and helmet)

3. Packaging and Material Handling

The India Packaging Market was valued at USD 50.5 billion in 2019, and it is expected to reach USD 204.81 billion by 2025, registering a CAGR of 26.7% during the period of 2020-2025.Packaging is among the high growth industries in India and developing @ 22-25% per annum and becoming a preferred hub for packaging industry. Currently the 5th largest sector of India's economy, the industry has reported steady growth over past several years and shows high potential for much expansion, particularly in the export market.

This kind of growth potential will require robust standardization and standards that could be effectively implemented for speed and efficiency of packaging and logistics industry.

Some of the areas which would need standards in future are:

- Collapsible Pallets,
- Stackers,
- Order pickers,
- Very narrow-aisle trucks,
- Multi-layer blow moulded containers,
- Injection moulded containers,
- Roto moulded containers,
- Bulk containers,
- Thin-wall glass containers,
- Thin-wall metal containers,
- Two piece metal containers,
- Aluminium containers etc.
- Carriage of hazardous goods in limited quantity etc.

4. Unmanned Aerial Vehicles (UAV)

Drones or Unmanned Aerial Vehicles, although currently in the nascent stage in terms of mass adoption are becoming increasingly popular for Military, Commercial, Personal, and Future Technology usages. With wide ranging applications from surveillance to amateur and professional photography, from defence to disaster relief and disease control, from weather forecasting to waste management, from mining to construction and planning, from insurance to real estate, from urban planning to personal transportation, from tourism and hospitality to advertising and retail delivery, from manufacturing and inventory management to crime control, from fitness to food services and from agriculture to journalism and news coverage, drones are destined to become omnipresent in the years to come.

The next generation of drones, that is generation of Smart drones with built-in safeguards and compliance tech, smart accurate sensors, and self-monitoring are the next big revolution in drone technology that would provide new opportunities in transport, military, logistics, and commercial sectors.

Some of the key areas of standardization in the field of Drones can be :

- Product manufacturing and maintenance,
- Operations and procedures,
- UAS Traffic Management,
- Testing and evaluation
- UAS subsystems
- Detect And Avoid (DAA)
- Counter UAS

5. Bicycles

Cycling is one of the most sustainable modes of transportation. It has numerous benefits in the form of zero dependence on fossil fuels, zero emissions and pollution, health benefits from increased physical activity, besides being an affordable means of mobility for low-income households. For these individuals, especially in rural areas, it improves access to jobs, education, and health facilities. The benefits of cycling vary from zero dependence on fossil fuels and zero emissions, to health benefits and affordable transportation for low-income households. Although, various components of bicycles have already been standardized, some of the priority areas may be following for future standardization:

- Electric Power Assisted Cycles
- Foldable Cycles
- Public Bike Sharing system (intelligent bicycle)
- E-Rickshaws

6. Vehicles running on green energy

Keeping in view, one of the sustainable development goals of the United Nations, that is , Affordable and Clean Energy, the use of alternative fuels for automotive applications is being

advocated to decrease harmful exhaust emissions (such as carbon dioxide, carbon monoxide, particulate matter and sulfur dioxide) as well as ozone-producing emissions. Some of the popular and upcoming areas of alternate fuel vehicles where standardization will be required in future are:

- Development of standards for CNG, Bio-CNG, HCNG & LNG components.
- Development of standards for Ethanol, Methanol and Bio-Diesel components.
- Development of connectors standards for gaseous fuels
- LPG Hose and Filters
- Safety of Electric Vehicles
- Electric Motors for Electric Vehicles
- Traction battery for Electric Vehicles
- Rechargeable energy source
- Testing and performance of Electric Vehicles
- Electric Compressor, Motor Controller and BMS for EV
- Standards for components of Hydrogen Fuel Cell vehicles
- Traction battery for Electric Vehicles
- Development of standards for Bio-Methane, Bio-Gas, Hydrogen, DME components
- ECU and refuelling connectors
- Components for flex-fuel vehicles

7. Intelligent Transport System

An intelligent transportation system (ITS) is an advanced application which aims to provide innovative services relating to different modes of transport and traffic management and enable users to be better informed and make safer, more coordinated, and 'smarter' use of transport networks.

Some of these technologies include calling for emergency services when an accident occurs, using cameras to enforce traffic laws or signs that mark speed limit changes depending on conditions.

Some of the areas where standards will be needed in future are :

- Emergency vehicle notification systems
- Automatic road enforcement
- GPS based Electronic Toll Collection System
- Collision avoidance systems
- Reverse Parking Assist System (RPAS)
- Reversing alarm
- Passenger information system
- Fare collection
- Forward collision warning system
- Acoustic vehicle alert system
- Select features of ADAS

All the areas of standardization will have a futuristic approach keeping in view the technological developments and state of the art. The standards formulation will have a time bound approach so that the standards are available for use in the least possible time to keep pace with the advancements in the technology and prevalent practices.