BUREAU OF INDIAN STANDARDS

AGENDA

Name of the Committee	No. of Meeting	Date and Time	Day	Mode : Hybrid (Virtual + Physical)
Automotive Vehicles Running on Non-conventional Energy Sources Sectional Committee, TED 26	Twenty-Eighth (28th)	19th December 2024 from 10:30 AM onwards	Thursday	**Physical Venue : ARAI Kothrud, Pune, Maharashtra, India** **Virtual Venue:** Webex **Meeting Link :** https://bismanak.webex.com/bismanak/j.php?MTID=m1cb8a35972cc6d463ce59cb3db1ee59c **Meeting ID:** 2518 623 9199 **Password:** Ted26

CHAIRPERSON: Dr S.S. Thipse **MEMBER SECRETARY:** Shri Gaurav Jayaswal
HEAD (TED): Shri A P D Dwivedi

ITEM 0 WELCOME ADDRESS

0.1 Welcome remarks by the Head (TED)

0.2 Opening Remarks by the Chairperson

ITEM 1 CONFIRMATION OF THE MINUTES OF LAST MEETING

1.1 The Minutes of the 27th Meeting of Automotive Vehicles Running on Non-conventional Energy Sources Sectional Committee, TED 26 held in online mode through Webex Video Conferencing Platform, on 31/05/2024 were circulated through BIS Portal.

1.2 No comments with regards to decision of committee have been received. The Committee may kindly confirm the Minutes.

ITEM 2 SCOPE AND COMPOSITION OF THE SECTIONAL COMMITTEE

2.1 Existing Scope of Sectional Committee TED 26 as approved by TEDC in its 30th Meeting dt. 18/03/2024 is as follows:

a) *Scope : "Standardization of Fuel System Components for Automotive Vehicles using New and Renewable Energy Sources such as Compressed Natural Gas (CNG), Liquified Natural Gas (LNG), Liquefied Petroleum Gas (LPG), Bio-CNG (CBG), Bio-diesel/diesel blends, alcohol (Ethanol/Methanol)-petrol blends, Hydrogen, Hydrogen/Methane Blends, Fuel Cells, DME, DME-LPG Blends, Ammonia along with other synthetic fuels and their installation requirements."*

b) *Liaison : "Liaison with Co-ordination of work with ISO/TC 22/SC 41 (Voter), ISO TC 197 (Voter), ISO/TC 22/SC 37 (Ballot Monitor)"*

The Committee may please note.

2.2 The present composition of this Sectional Committee, TED 26 is given in **Annex- 1.** The list shows the attendance of the members in the last three consecutive meetings and also their status as Consumer, Industry, Testing Laboratory, etc. The Committee may deliberate and decide on further continuation / deletion of representation of these organizations.

2.3 Withdrawals

2.3.1 In line with BIS Circular PNC09/18/2023-PNC-BIS dated 05/09/2023, The committee in its previous(27^{th}) meeting decided to withdraw the membership of following organization from SC TED 26:

Sl. No.	**NAME OF THE ORGANIZATION**
1.	Central Pollution Control Board (CPCB)
2.	Delhi Transport Corporation (DTC)
3.	GAIL (India) Limited, New Delhi
4.	Petronet LNG Ltd. New Delhi
5.	Prodair Air Products India Private Ltd., Pune
6.	TVS Motor Company Ltd, Hosur
7.	Volkswagen India Pvt. Ltd.

2.3.2 The committee however requested Member Secretary to again follow up with the govt organizations (i.e. CPCB, DTC and GAIL) for their updated Nominations. ARAI was also requested to assist BIS with Contact details of the current personnel posted in these organizations.

2.3.3 An email dt. 30/05/2024 was sent to M/s CPCB for providing the updated Nomination with a reminder email dt.24/07/2024. Updated nominations have been received from M/s CPCB through email dt.31/07/2024.Nominations have been updated on BIS portal.

2.3.4 Emails/Letters dt.17/12/2024 were sent to M/s Gail and M/s DTC for providing Updated nominations. The response is awaited. The committee may please note.

2.4 Following organizations failed to attend consecutive previous two (2) meetings:

Sl. No.	NAME OF THE ORGANIZATION	REPRESENTED BY Principal member (*Alternate member*) (*Young Professional*)	Attendance of the last three meetings			
			25th	26th	27th	Total
1.	Indian Rubber Mfrs. Research Association, Thane, Mumbai	Dr K Raj Kumar (P) Dr Bharat Kapgate (A)	Y	N	N	1/3
2.	Rohan BRC Gas Equipment Pvt. Ltd, Ahmedabad	Shri Stefano De Carolis (P) Shri Parthiv Shukla (A)	Y	N	N	1/3

The committee may discuss the course of action to retain/remove the membership of aforementioned organizations in line with Circular PNC09/18/2023-PNC-BIS dated 05/09/2023.

2.5 Co-options

2.5.1 Following New Co-option requests have been received for membership of SC TED 26 :

Sl. No.	Name of Organisation	Name of Representative	CV/Resume/Email/ Nomination Proforma	Remarks
1.	M/s Alleima India Private Limited	Shri Yogesh Badgujar	**Annex- 2**	-
		Shri Sudhindra Hathwar	**Annex- 3**	-
2.	Reliance Industries Limited	Shri Ashish Kumar	**Annex- 4**Error! Reference source not found.	-

The committee may deliberate and decide.

2.5.2 The committee also decided to Co-opt following organizations in SC TED 26 in its last (27th Meeting). The status of follow up is given below:

Sl No.	Name of Organization	Discussion / Decision	Status
1.	GARC	Member Secretary was requested to follow up with SC TED 31 (*In service Vehicle Inspection, Certification and Garage Equipment Sectional Committee*) for getting Nominations from GARC.	Email for co-option was sent to Shri S. Nagarajan, M/s GARC dt. 05/09/2024. An email dt.18/10/2024 received of Nomination from M/s GARC ,Nomination has been updated on BIS portal. The committee may please note.
2.	BHEL	Member Secretary was requested to follow up	Email for co-option was sent to Shri Manish Agrawal, Deputy General Manager, BHEL

		with Mechanical Engineering Department (MED) at BIS for getting BHEL onboard in SC TED 26.	dt. 16/10/2024 along with 1st reminder dt.11/12/2024 after receipt of contact details of BHEL from MED team. Response is Still Awaited. The committee may please note.
3.	ISRO	Member Secretary was requested to follow up with SC TED 14 (*Air and Space Vehicles Sectional Committee*) for getting Nominations from ISRO to specifically work on Hydrogen Technologies.	Email for co-option was sent to Shri Anil Kumar, (director), ISRO dt.05/09/2024. Email Reminders dt.07/10/2024, 15/10/2024 & dt.06/12/2024 were sent. Response is however awaited. The committee may please note.
4.	CFCT, Chennai	ARAI was requested to provide the contact details of CFCT, Chennai to BIS.	Email dt. 06/09/2024 along with reminder was sent to Shri Ajay Dekate to provide contact details. Response is awaited. The committee may please note.
5.	ICEMA	ARAI was requested to provide contact details of ICEMA to BIS.	

2.5.3 The committee also assigned the responsibility of providing contact details of new organizations co-opted into various panels under TED 26 to BIS as follows:

Sl No.	**Name of Organization**	**Organization who will provide the Contact Details to BIS**	**Status**
1.	SHIGAN (Quantum Technologies)	It was informed by committee members that the name of M/s CLH Gaseous Fuel Applications (P) Ltd, Gurgaon has been changed to M/s SHIGAN (Quantum Technologies). Member secretary was requested to follow up with M/s CLH for their confirmation.	The new name of the organization has been updated on BIS portal.
2.	Advantek Fuel Systems Pvt Ltd.	ACMA	An email dt. 03/09/2024 was sent along with reminder dt. 07/10/2024 to Shri Sanjay Tank to provide contact details of M/s Advantek, KPIT, and Continental/Vitesco.
3.	KPIT Technologies Ltd.	ACMA	
4.	Continental/Vitesco	ACMA	

			Only Nominations have been received from M/s KPIT through email dt. 27/09/2024 and the same have been updated in Panel 3, 6 & 7 on BIS portal. Contact details of M/s Advantek and M/s Continental/Vitesco however is still awaited. The committee may please note.
5.	Volkswagen India Pvt Ltd.	ARAI	Email dt.03/09/2024 was sent M/s ARAI to provide contact details. After receipt of email dt.03/09/2024 consisting of contact details from ARAI, email dt.10/09/2024 along with a reminder dt.07/10/2024 was sent to M/s Volkswagen. Updated nomination details was received from M/s Volkswagen through mail dt.09/10/2024. Nomination has been updated on BIS portal in SC TED 26 Panel-3.
6.	Reliance	ARAI	Email dt.03/09/2024 was sent M/s ARAI to provide contact details. After receipt of email dt.03/09/2024 consisting of contact details from ARAI, an email was sent to M/s Reliance on 10/09/2024, followed by a reminder on 07/10/2024. Updated nomination details were received from M/s Reliance via email on 09/10/2024. Nomination has been updated on BIS portal in SC TED 26 Panel-3, Panel 6 & Panel-7.
7.	NTPC	ARAI	An email dt. 03/09/2024 was sent to M/s ARAI to provide contact details. After receiving

			the contact details from ARAI on 03/09/2024, an Email dt.10/09/2024 for co-option was sent to Shri Ritwick Ghosh. Updated nomination details were received from M/s NTPC via email on 12/09/2024. Nomination has been updated on BIS portal in SC TED 26 Panel-3, Panel 6 & Panel-7.
8.	INOX CVA	ARAI	Email dt.10/09/2024 for co-option was sent to Shri Deepak Acharya, CEO. Email : Ist Reminder dt.07/10/2024 , IInd reminder dt.11/12/2024 Response is Still Awaited.
9.	NCL	ARAI	An email dt. 03/09/2024 was sent to M/s ARAI to provide contact details. After receiving the contact details from ARAI on 03/09/2024, Email dt.10/09/2024 for co-option was sent to Shri T.Raja, Professor. Email : Ist Reminder dt.07/10/2024 , IInd reminder dt.11/12/2024 Response is Still Awaited.
10.	THERMAX	ARAI	An email dt. 03/09/2024 was sent to M/s ARAI to provide contact details. After receiving the contact details from ARAI on 03/09/2024. Email dt.10/09/2024 for co-option was sent to M/s Thermax and updated nomination received from M/s Themax via. mail dt.07/10/2024. Nomination has been updated on BIS portal in SC TED 26 / Panel-8.
11.	ECMA	ARAI	An email dt. 03/09/2024 was sent to M/s ARAI to provide contact details. After receiving the contact details from ARAI on 03/09/2024, Email dt.10/09/2024 for co-option was sent to Shri Neelkanth Marathe, ED .

			Email : Ist Reminder dt.07/10/2024 , IInd reminder dt.11/12/2024 Response is Still Awaited.
12.	AMOL CARBONS	ARAI	The contact details from ARAI have not been received yet.
13.	HPCL	ARAI	An email dt. 03/09/2024 was sent to M/s ARAI to provide contact details. After receiving the contact details from ARAI on 03/09/2024 Email dt.10/09/2024 for co-option was sent to Shri Muralidharan updated nomination received from M/s HPCL via. mail dt.20/09/2024. Nomination has been updated on BIS portal in SC TED 26 / Panel-8.
14.	Volvo/Eicher	SIAM	An email dt. 03/09/2024 was sent to M/s SIAM to provide contact details. After receiving the contact details from SIAM on 10/09/2024, An email dated 12/09/2024 & 13/09/2024 regarding co-option of M/s Volvo was sent to Shri Rahul Singh from Volvo. He subsequently recommended Mr. Akhilesh Shukla for the position of convener of Panel 8. An Email dt.07/10/2024 was written by Dr.S.S Thipse (Chairperson) to Mr. Akhilesh Shukla requesting his nomination consent for convenorship of Panel 8. Reminders have been sent dt 15/10/2024 and 13/12/2024. However response is still awaited.

2.6 Panels Working Under SC TED 26

2.6.1 The committee in its previous (26th) meeting, reconstituted the panels working under its purview. The details of the same is given below:

Panel	Updated Composition	Updated Assignments	Discussion in the last meetings	Status in the 28th Meeting
TED 26/P-1 : Panel for Bio-CNG/CNG/LPG	**Panel Convener:** Shri Ajay D Dekate, ARAI **Members:** 1. Advantek Fuel Systems Pvt. Ltd. 2. Ashok Leyland 3. Automotive Component Manufacturers Association of India (ACMA) 4. Bajaj Auto Limited 5. Indian Auto LPG Coalition 6. International Centre for Automotive Technology (ICAT) 7. Mahindra and Mahindra Limited 8. Maruti Suzuki India Limited(MSIL)	• Finalization of the composition of Panel (*Contact details of panel members need to be communicated to BIS Secretariat for registration on the BIS Portal.)* • Review of following LPG / CNG Standards : 1. **IS 15956 : 2012** - Road vehicles - Liquefied petroleum gas (LPG) specific equipment - Definitions, classification and general requirements 2. **IS 15957 : 2012** - Road vehicles - Liquefied petroleum gas (LPG) specific equipment - general design requirements, performance and test methods 3. **IS 16009 : 2013** - Road vehicles - Liquefied petroleum gas (LPG) specific equipment - Shut off valve 4. **IS 16053 : 2013** - Road vehicles -	**Status in the 27th Meeting** Panel details have been updated on BIS Portal. Panel Meeting yet to be conducted by the panel convener. **Decision in the 27th Meeting:** The committee requested ARAI to conduct the meeting of Panel 1 at the earliest to complete the pending works with Panel 1.	Email dt.06/09/2024 was sent to Panel convener to conduct the meeting of Panel. The panel convener Shri Ajay D Dekate, ARAI conducted the meeting on 23/10/2024, and the minutes of the meeting is attached at **Annex- 5**. and same has been circulated at BIS portal. The committee may please note.

	9. Society of Indian Automobile Manufacturers (SIAM) 10. Swagelok – Bombay Fluid System components Pvt. Ltd. 11. Tata Motors Limited 12. Vanaz Engineers Limited 13. Indian Oil 14. SHIGAN (Quantum Technologies) 15. Minda Westport 16. AB Process	Liquefied petroleum gas (LPG) specific equipment - Pressure regulator and vapourizer 5. **IS 16062 : 2013** - Road vehicles - Liquefied petroleum gas (LPG) specific equipment - Pressure and/or temperature sensor 6. **IS 16063 : 2013** - Road vehicles - Liquefied petroleum gas (LPG) specific equipment - LPG filter unit 7. **IS 16064 : 2013** - Road vehicles - Liquefied petroleum gas (LPG) specific equipment - Gas mixing piece 8. **IS 16065 : 2013** - Road vehicles - Liquefied petroleum gas (LPG) specific equipment - Fuel rail 9. **IS 16367 : 2017** - Road vehicles - Liquefied petroleum gas (LPG) specific equipment - Gas injector 10. **IS 16057: 2013** – LPG operated internal combustion engines - Safety and performance requirements – Specification		

		11. **IS 15870 : 2009—** Road vehicles - Use of compressed natural gas (CNG) fuel system in internal combustion engine vehicles - Code of practice • Examination of ISO Ballots related to Bio-CNG/CNG/LPG • Identification of New Subject for formulation of Indian Standards in the domain of Bio-CNG/CNG/LPG		
TED 26/P-2 : Panel for Hydrogen /Natural gas blends (HCNG) fuel system components	**Panel Convener:** Shri S J Vispute, Vanaz Engineers Limited **Members:** 1. Ashok Leyland 2. Automotive Component Manufacturers Association of India (ACMA) 3. Bajaj Auto Limited 4. CLH Gaseous fuel Applications (P) Ltd	• Finalization of the composition of Panel (*Contact details of panel members need to be communicated to BIS Secretariat for registration on the BIS Portal.)* • Review of standards formulated by ISO TC 22/SC 41, ISO TC 197, and other global standards bodies concerning HCNG Components to assess their viability for adoption as National Standards.	**Status in the 27th Meeting** Panel details have been updated on BIS Portal. Panel Meeting yet to be conducted by the panel convener. **Decision in the 27th Meeting:** The committee decided to Dissolve the Panel 2 and decided to merge its scope with Panel 7.	In line with decision of the previous meeting, The Panel has been dissolved and the same has been updated on BIS Portal. The committee may please note.

	5. Indian Auto LPG Coalition 6. International Centre for Automotive Technology (ICAT) 7. Indraprastha Gas Limited (IGL) 8. Indian Oil Corporation 9. KPIT Technologies Ltd. 10. Mahindra and Mahindra Limited 11. Maruti Suzuki India Limited(MSIL) 12. Society of Indian Automobile Manufacturers (SIAM) 13. Swagelok – Bombay Fluid System components Pvt. Ltd. 14. The Automotive Research Association of India(ARAI) 15. Tata Motors Limited 16. Minda Westport	• Examining the safe blending percentage of hydrogen in natural gas and updating this value across pertinent standards such as IS/ISO 12619 and similar standards for blending of hydrogen. • Review of ISO Ballots concerning HCNG fuel system components, particularly documents from ISO/TC 22/SC 41/JWG 5 { *Joint ISO/TC 22/SC 41 - ISO/TC 197 WG: Fuel system components and refuelling connector for vehicles propelled by blends of natural gas and hydrogen*} • Identification of New Subject for formulation of Indian Standards in the domain of HCNG Fuel system components		

TED 26/P-3 : Panel for Refilling connectors	**Panel Convener:** Dr. Sithananthan, Indian Oil Corporation Limited **Members:** 1. Central Institute of Road Transport 2. International Centre for Automotive Technology (ICAT) 3. Indraprastha Gas Limited (IGL) 4. KPIT Technologies Ltd. 5. Mahindra and Mahindra Limited 6. Minda Westport Technologies Limited 7. Maruti Suzuki India Limited(MSIL) 8. Petroleum and Explosive Safety Organization 9. Swagelok – Bombay Fluid	• Finalization of the composition of Panel (*Contact details of panel members need to be communicated to BIS Secretariat for registration on the BIS Portal.)* • Review of existing Indian standards for Refilling connectors and .receptacles • Examination of ISO Ballots related to Refilling connectors • Identification of New Subject for formulation of Indian Standards in the domain of DME / Hydrogen LNG Refilling / Connectors • Review of IS/ISO 17268 • Examination of ISO 13984:1999 "Liquid hydrogen — Land vehicle fuelling system interface" for adoption as Indian Standard.	**Status in the 27th Meeting:** Panel details have been updated on BIS Portal. Panel Meeting yet to be conducted by the panel convener. **Decision in the 27th Meeting:** The committee requested IOCL to conduct the meeting of Panel 3 at the earliest to complete the pending works with Panel 3. The committee also requested Panel 3 to Examine IS/ISO 17268 as this standard fall under 5 yearly review. The committee also requested Panel 3 to examine ISO 13984:1999 "Liquid hydrogen — Land vehicle fuelling system interface" for its adoption as Indian Standard.	An Email dt. 06/09/2024 along with reminder email dt.12/09/2024 was sent to Dr Sithananthan, (Panel Convener) to conduct panel meeting. The response is still awaited. The committee may please note.

	System components Pvt. Ltd. 10. The Automotive Research Association of India(ARAI) 11. Vanaz Engineers Limited 12. Volkswagen India Pvt. Ltd. 13. Shigan 14. TML 15. Reliance 16. NTPC			
TED 26/P-4 : Panel for LNG	**Panel Convener:** Shri P S Gowrishankar, Tata Motors Limited **Members:** 1. Ashok Leyland 2. Bajaj Auto Limited 3. Central Institute of Road Transport 4. CLH Gaseous fuel Applications (P) Ltd 5. GAIL 6. INOX 7. Indian Oil Corporation 8. International Centre for	• Finalization of the composition of Panel (*Contact details of panel members need to be communicated to BIS Secretariat for registration on the BIS Portal.)* • Code of Practice / Type Approval Standard for LNG run Vehicles • Review following ISO documents for safety aspects of LNG Vehicles: 1. ISO 19723-1:2018 2. ISO 19723-1:2018/Amd 1:2021 3. ISO 19723-2:2018 • Review of existing Indian standards related to LNG Fuel	**Status in the 27th Meeting:** Panel details have been updated on BIS Portal. Panel Meeting yet to be conducted by the panel convener. **Decision in the 27th Meeting:** Panel convener Shri Gowrishankar informed the committee that review work of LNG System component have been completed and the complete series of ISO 12614 (Part 1 to 18) has been adopted by SC TED 26.	An Email dt.06/09/2024 was sent to Shri P S Gowrishankar, Tata Motors Limited, (*Panel Convener*) to conduct panel meeting. Response is still awaited. The committee may please note.

	Automotive Technology (ICAT) 9. Mahindra and Mahindra Limited 10. Minda Westport Technologies Limited 11. Petronet LNG Limited 12. The Automotive Research Association of India (ARAI) 13. Vanaz Engineers Limited 14. SIAM 15. ACMA	System Components • Examination of ISO Ballots related to LNG Fuel System Components.	The Chairman asked Panel 4 to work on a Code of Practice / Type Approval Standard for LNG Operated Vehicles. Panel 4 was also requested to review following ISO documents for safety aspects of LNG Vehicles: 1. ISO 19723-1:2018 2. ISO 19723-1:2018/Amd 1:2021 3. ISO 19723-2:2018 Panel convener Shri P S Gowrishankar assured the committee to work on the new subjects given to the panel.	
TED 26/P-5 : Panel for Ethanol / Methanol / Bio-Diesel / Flex-Fuels	**Panel Convener:** Shri Gururaj Ravi, MSIL **Members:** 1. Ashok Leyland 2. Automotive Component Manufacturers Association	• Finalization of the composition of Panel (*Contact details of panel members need to be communicated to BIS Secretariat for registration on the BIS Portal.)* • Examination of international standards for Fuel Injectors and	**Status in the 27th Meeting:** Panel details have been updated on BIS Portal. Panel Meeting yet to be conducted by the panel convener. **Decision in the 27th Meeting:** The chairman asked MSIL to go	An Email dt.06/09/2024 was sent to Shri Gururaj Ravi, MSIL, (Panel Convener) to conduct panel meeting. The panel convener Shri Gururaj Ravi, MSIL

	of India (ACMA) 3. Bosch 4. Hero MotoCorp 5. IISc Bangalore 6. Indian Oil Corporation 7. Mahindra and Mahindra Limited 8. Society of Indian Automobile Manufacturers (SIAM) 9. The Automotive Research Association of India(ARAI) 10. Tata Motors Limited 11. Vanaz Engineers Limited 12. Continental /Vitesco	Hoses and determining their viability for adoption as Indian standards • Examination of ISO Ballots related toEthanol / Methanol / Bio-Diesel / Flex-Fuel system components	through the <u>program of work of ISO TC 28</u> and other ISO TCs sort out 4-5 relevant ISO Standards on Vehicle Components for Ethanol / Methanol / Bio-Diesel / Flex-Fuels for deliberation in the panel for adoption in India. He also asked BIS to provide the ISO Standards chosen by MSIL to Panel 4 for study purposes.	conducted the meeting on 28/10/2024, and the minutes of the meeting is attached at **Annex- 6** and same has been circulated at BIS portal. The committee may please note.
TED 26/P-6 : Panel for Hydrogen Fuel Cell	**Panel Convener:** Shri P S Gowrishankar, Tata Motors Limited **Members:** 1. Ashok Leyland 2. Automotive Component Manufacturers	• Finalization of the composition of Panel (*Contact details of panel members need to be communicated to BIS Secretariat for registration on the BIS Portal.* • Conversion of AIS 157 to Indian Standard • Examination of ISO 19882:2018	**Status in the 27th Meeting:** The Panel Convener prepared the Working Draft based on AIS 157 and submitted to BIS for internal circulation within the committee. The Working Draft was circulated among	The matter of referring the UN ECE Guidelines and other International Regulations / Standards (i.e. GTR 13, SAE Standards etc.) Where Indian Standards are already available,

	Association of India (ACMA) 3. Bajaj Auto Limited ~~4.~~ Shigan 5. International Centre for Automotive Technology (ICAT) 6. Indian Oil Corporation 7. KPIT Technologies Ltd. 8. Mahindra and Mahindra Limited 9. Maruti Suzuki India Limited(MSIL) 10. Society of Indian Automobile Manufacturers (SIAM) 11. Swagelok – Bombay Fluid System components Pvt. Ltd. 12. The Automotive Research Association of India(ARAI) 13. Vanaz Engineers Limited 14. PESO 15. Reliance 16. AB Process 17. NTPC	"Gaseous hydrogen — Thermally activated pressure relief devices for compressed hydrogen vehicle fuel containers" for its adoption as Indian Standard and ISO ballots related to it. • Assessment of global standards concerning vehicles powered by hydrogen fuel cells to determine their suitability for adoption as Indian standards. • Examination of ISO Ballots related to H_2 Fuel Cell vehicles • Identification of other New Subjects for formulation of Indian Standards in the domain Hydrogen Fuel cell vehicles	the committee members dt. 25/04/2024 for comments after approval from chairperson, TED 26. Subsequently, A Panel Meeting was organized by the Panel Convener dt. 17/05/2024 to discuss and resolve the comments received. The minutes of the meeting were circulated through BIS Portal dt. 20/05/2024 and also attached at Error! Reference source not found. for reference. **Decision in the 27th Meeting:** The chairman Appreciated the work done by Shri Gowrishankar and the Panel 6 to convert AIS 157 to Indian Standard. The matter of referring the UN ECE Guidelines and other International Regulations / Standards (i.e. GTR 13, SAE Standards etc.)	was discussed in the last (27th) committee meeting but No Consensus was reached. The chairman then requested all members to thoroughly analyze the matter and present their comments at the next meeting. It was decided to take a final call on the matter in the next meeting. The committee may deliberate and decide. The committee in its last (27th) meeting also requested Panel 6 to examine ISO 19882:2018 "Gaseous hydrogen — Thermally activated pressure relief devices for compressed

	18. IIT Ropar 19. M/s Apurwa Green Tech		Where Indian Standards are already available, was also discussed in the meeting but No Consensus was reached. The chairman then requested all members to thoroughly analyze the matter and present their comments at the next meeting. It was decided to take a final call on the matter in the next meeting. The committee also requested Panel 6 to examine ISO 19882:2018 "Gaseous hydrogen — Thermally activated pressure relief devices for compressed hydrogen vehicle fuel containers" for its adoption as Indian Standard and ISO ballots related to it.	hydrogen vehicle fuel containers" for its adoption as Indian Standard and ISO ballots related to it. The committee may deliberate and decide.
TED 26/P-7 : Panel for Hydrogen IC Engine & Hydrogen /Natural gas blends (HCNG)	**Panel Convener:** Shri Muthu Kumar, Ashok Leyland (AL) **Members:**	• Development of standards for hydrogen injection systems encompassing both port fuel injection (PFI) and direct injection (DI), as well as	**Status in the 27th Meeting:** The Panel Convener prepared two Working Drafts based on AIS 195 for M&N Category vehicles	An email dated 16/10/2024 was received from Shri Muthu Kumar, Panel Convener of Ashok Leyland,

fuel system components	1. Automotive Component Manufacturers Association of India (ACMA) 2. Bajaj Auto Limited 3. International Centre for Automotive Technology (ICAT) 4. Indian Oil Corporation 5. KPIT Technologies Ltd. 6. Mahindra and Mahindra Limited 7. Maruti Suzuki India Limited(MSIL) 8. Society of Indian Automobile Manufacturers (SIAM) 9. Swagelok – Bombay Fluid System components Pvt. Ltd. 10. The Automotive Research Association of India(ARAI) 11. Tata Motors Limited	materials and safety devices compatible with hydrogen • Examining the safe blending percentage of hydrogen in natural gas and updating this value across pertinent standards such as IS/ISO 12619 and similar standards for blending of hydrogen. • Assessment of global standards concerning vehicles powered by hydrogen IC Engines to determine their suitability for adoption as Indian standards. • Review of Ballots and standards formulated by ISO TC 22/SC 41, ISO TC 197, and other global standards bodies concerning H_2 ICE & HCNG Components to assess their viability for adoption as National Standards.	and for CEVs and submitted the same to BIS for internal circulation within the committee. The Working Drafts were circulated among the committee members dt. 15/05/2024 for comments after approval from chairperson, TED 26. Subsequently, A Panel Meeting was organized by the Panel Convener dt. 28/05/2024 to discuss and resolve the comments received. The minutes of the meeting were circulated through BIS Portal dt. 29/05/2024 and also attached at Error! Reference source not found. for reference. **Decision in the 27th Meeting:** The chairman Appreciated the work done by Shri Muthu Kumar and the Panel 7 to convert AIS 195 to Indian Standard.	regarding the scheduling of a panel meeting on 25/10/2024. The meeting was successfully conducted by M/s Ashok Leyland on 25/10/2024. Minutes of meeting is attached at **Annex- 7** same has been circulated on BIS portal and third Panel –7 meeting has been conducted by Shri Muthu Kumar, Ashok Leyland on 11/12/2024. The minutes of the meeting has been circulated through BIS portal and the same has been attached at **Annex- 8** for reference. The committee may please note.

	12. Vanaz Engineers Limited 13. PESO 14. Reliance 15. AB Process 16. NTPC 17. IISc Bangalore 18. Volvo Eicher 19. Minda Westport 20. IIT Ropar 21. M/s Apurwa Green Tech		He also highlighted that the scope of Panel 2 (HCNG) has now been merged with Panel 7 and requested all members of Panel 7 to actively work on HCNG-related standards as well. The matter of referring the UN ECE Guidelines and other International Regulations / Standards (i.e. GTR 13, SAE Standards etc.) Where Indian Standards are already available, was also discussed in the meeting but No Consensus was reached. The chairman then requested all members to thoroughly analyze the matter and present their comments at the next meeting. It was decided to take a final call on the matter in the next meeting.	
TED 26/P-8 : Panel for Synthetic Fuels	**Panel Convener:** Volvo (SIAM was requested to give Contact Details of	• Finalization of the composition of Panel (*Contact details of panel members need to be communicated to BIS Secretariat*	**Status in the 27th Meeting:** Panel details have been updated on BIS Portal.	An email dt. 03/09/2024 was sent to M/s SIAM to provide contact details. After receiving the

	personnel from Volvo) **Members:** 1. NCL 2. THERMA X 3. AL 4. MSIL 5. IISc 6. IIT Delhi 7. IAC 8. Vanaz 9. TML 10. Shigan Quantam 11. SIAM 12. ACMA 13. ECMA 14. AMOL Carbons 15. HPCL 16. ARAI 17. Scania	*for registration on the BIS Portal.* • Development of standards for DME fuel system components including DME-LPG Blends • Review of international standards related to E-Fuels and Ammonia to explore their potential adoption or modification as national standards. • Review of ISO Ballots related to Synthatic Fuels • Identification of other New Subjects for formulation of Indian Standards in the domain of synthetic fuels	Panel Meeting yet to be conducted by the panel convener. **Decision in the 27th Meeting:** The committee decided to appoint M/s Volvo as the convenor for Panel 8 on Synthetic Fuel. The chairman requested SIAM to provide the contact details of senior official at M/s Volvo to BIS for convenorship of Panel 8. ARAI was also requested to provide contact details of M/s NCL, M/s THERMAX, M/s ECMA, M/s AMOL Carbons, M/s HPCL and M/s SCANIA to BIS and Panel Convener.	contact details from SIAM on 10/09/2024. An email dated 12/09/2024 & 13/09/2024 regarding co-option of M/s Volvo was sent to Shri Rahul Singh from Volvo. He subsequently recommende d Mr. Akhilesh Shukla for the position of convener of Panel 8. An Email dt.07/10/2024 was written by Dr.S.S Thipse (Chairperson) to Mr. Akhilesh Shukla requesting his nomination consent for convenorship of Panel 8. Reminders have been sent dt 15/10/2024 and 13/12/2024. However response is still awaited.
TED 26/P-9 : Panel	**Panel Convener:** Dr.	• Finalization of the composition of	**Status in the 27th Meeting:**	After receiving the

for Training, competence and conformity assessment	R. V. Ravi Krishna, IISc Bangalore **Members:** 1. IIT Indore 2. IIT Ropar 3. ARAI 4. Indian Institute of Technology Palakkad, Palakkad 5. Ashok Leyland Limited, Chennai 6. Cummins India Limited, Pune 7. Maruti Suzuki India Limited, Gurugram 8. Tata Motors Limited, Pune 9. Other members as recommended by Convener and approved by SC TED 26	Panel (*Contact details of panel members need to be communicated to BIS Secretariat for registration on the BIS Portal.* • Development of Industrial Training standards related to alternate fuels in line with developments at ISO/TC 22/SC 41/WG 9 : *Training, competence and conformity assessment* and ISO TC 197. • Review of ISO Ballots related to Industrial Training Standards	Panel details have been updated on BIS Portal. Panel Meeting yet to be conducted by the panel convener. **Decision in the 27th Meeting:** Prof Ravi Krishna from IISc informed the committee that there are only 2 ISO Standards (ISO 23684:2023, & ISO 24671:2024) available from ISO TC 22 / SC 41 related to the scope of the panel and they were also related to Natural Gas only. The committee requested the panel to examine these standards and suggest if these standards may directly be adopted for Indian Conditions. The committee also requested the panel to work on similar standards for Hydrogen Fuel Systems as well.	contact details from Dr R. V. Ravi Krishna, IISc Bangalore on 31/05/2024. Email/Letter dt. 12/09/2024 were sent to IIT Indore and IIT Palakkad. Email dt.17/09/2024 was received from IIT Palakkad & email dt.13/09/2024 was received from IIT Indore having nominations from these organizations. The nominations have been updated on BIS portal. An email was received from Dr R. V. Ravi Krishna, IISc Bangalore for the ISO documents :- ISO 23684:2023 Road vehicles — Technical personnel dealing with natural gas vehicles (NGVs) — Training and qualification

				and ISO 24671:2024 Road vehicles — Qualification and certification of technical personnel dealing with natural gas vehicles (NGVs). These documents have been provided by BIS through email dt.24/10/2024 . An email dt.18/10/2024 was written to Dr ravi krishna for conducting the panel meeting. The Response is awaited.
TED 26/P-10 : Panel on Construction Equipment Vehicles (CEVs)	**Panel Convener :** Mr. Karthik from ICEMA **Members:** 1. ARAI 2. ICAT 3. VOLVO Construction 4. ICEMA Members 5. BHEL	• Conversion of AIS 157a to Indian Standard • Conversion of AIS 195a to Indian Standard	The committee decided to create a new panel to deal with standards related to Construction Equipment Vehicles (CEVs). The committee decided to Appoint Mr. Karthik from ICEMA as the convenor of the panel.	Email dt.06/09/2024 was sent Shri Ajay Dekate to provide contact details and reminder dt.11/09/2024 ,dt.07/10/2024,dt.06/12/2024,dt.10/12/2024 and dt.12/12/2024 .

			ARAI was requested to provide contact details of Shri Karthik from ICEMA to BIS for further follow ups. The working panel was given the task to work on conversion of AIS 157a and AIS 195a to Indian Standards with suitable modifications as deemed fit by the panel and approved by SC TED 26.	Response is still awaited.

The committee may review the composition assignment and current progress of the panels.

2.6.2 In addition to above, The committee may consider to formulate New Panels and Working Groups for smooth functioning of its activities in line with circular P&C/09/18/2023-PNC-BIS.

ITEM 3 ACTIONS ARISING OUT OF THE MINUTES OF THE LAST MEETING

The summary of actions taken on the minutes of previous meeting is given below:

Sl. No.	Subject	Background	Status and Decision in the previous Committee Meeting	Current Status
1.	**Review of CNG Series of Standards**	A Series of 14 standards on CNG Sub systems have been taken up for review by Sectional Committee TED 26. These 14 standards are given below:	**Status in 26th Meeting:** Following documents are under wide circulation : **1.** *TED 26 (15007)* **2.** *TED 26 (15008)* **3.** *TED 26 (18368)* **4.** *TED 26 (18373)* **5.** *TED 26 (18374)* **6.** *TED 26 (18375)* **7.** *TED 26 (18377)*	All documents have been sent to publication department and are expected to be published soon.
		Review for revision of IS 15710:2006 **Doc: TED 26(14995)**		
		Review for revision of IS 15711:2006 **Doc: TED 26(15007)**		

Sl. No.	Subject	Background	Status and Decision in the previous Committee Meeting	Current Status
		Review for revision of IS 15712:2006 **Doc: TED 26 (15008)** Review for revision of IS 15713:2006 **Doc : TED 26 (18368)** Review for revision of IS 15714:2006 **Doc : TED 26 (18373)** Review for revision of IS 15715:2008 **Doc: TED26 (15013)** Review for revision of IS 15716:2006 **Doc: TED26 (15014)** Review for revision of IS 15717:2006 **Doc : TED 26 (18374)** Review for revision of IS 15718:2006 **Doc : TED 26 (18375)** Review for revision of IS 15719:2006 **Doc : TED 26 (18377)** Review for revision of IS 15720:2008 **Doc : TED 26 (18378)** Review for revision of IS 15721:2006 **Doc : TED 26 (18379)** Review for revision of IS 15722:2006 **Doc : TED 26 (18380)** **Status in 23rd Meeting:** The Draft documents TED 26 (14995), TED 26 (15014) have been sent for Wide Circulation. Document TED 26 (15007), TED 26 (15008), TED 26 (15013) & TED 26 (15015) have been sent for HoD approval for Wide circulation.	**8.** *TED 26 (18378)* **9.** *TED 26 (18379)* **10.** *TED 26 (18380)* **Decision in the 26th Meeting:** The committee noted **Status in 27th Meeting:** Following documents have completed their wide circulation period: **1.** *TED 26 (15007)* **2.** *TED 26 (15008)* **3.** *TED 26 (18368)* **4.** *TED 26 (18373)* **5.** *TED 26 (18374)* **6.** *TED 26 (18375)* **7.** *TED 26 (18377)* **8.** *TED 26 (18378)* **9.** *TED 26 (18379)* **10.** *TED 26 (18380)* No Comments have been received. The committee may deliberate and decide. In addition, The committee finalized following four documents for printing in its 24th meeting (*However kept the documents on hold in 25th meeting till the time all documents get finalized to address the cross referencing problem*)	The committee may please note.

Sl. No.	Subject	Background	Status and Decision in the previous Committee Meeting	Current Status
		Apart from the aforesaid six documents, Remaining 8 documents have also been received from Panel Convener and the same are attached as Annexure-4 of Agenda of 23rd Meeting. The Committee may deliberate and decide. **Decision in 23rd Meeting:** The committee noted the status of documents TED 26 (14995), TED 26 (15014), TED 26 (15007), TED 26 (15008), TED 26 (15013) & TED 26 (15015). The committee also decided to send remaining eight documents of this series as attached with agenda for wide circulation. **Status in 24th Meeting:** Following Documents Have completed their Wide Circulation Period : **1.** *TED 26 (14995)* **2.** *TED 26 (15013)* **3.** *TED 26 (15014)* **4.** *TED 26 (15015)* Comments have been received on the document TED 26 (14995)W and the same have been attached as Annexure 2 of the Agenda. No Comments have been received on other three documents i.e. TED 26 (15013)W TED 26 (15014)W TED 26 (15015) W.	**1.** *TED 26 (14995) {After Incorporating accepted comments}* **2.** *TED 26 (15013)* **3.** *TED 26 (15014)* **4.** *TED 26 (15015)* **Decision in the 27th Meeting:** The committee may deliberate and decide.	

Sl. No.	Subject	Background	Status and Decision in the previous Committee Meeting	Current Status
		The Committee may discuss the comments and finalize the documents for printing. Apart from that following Documents have been sent as P Drafts and have completed their circulation period : **1.** *TED 26 (15007)* **2.** *TED 26 (15008)* **3.** *TED 26 (18368)* **4.** *TED 26 (18373)* **5.** *TED 26 (18374)* **6.** *TED 26 (18375)* **7.** *TED 26 (18377)* **8.** *TED 26 (18378)* **9.** *TED 26 (18379)* **10.** *TED 26 (18380)* No Comments have been received on these documents. The committee may send these drafts for Wide Circulation. **Decision in 24th Meeting:** The comments received on the document TED 26 (14995) was discussed in the meeting and the committee decided to accept all the comments owing to their editorial Nature. The committee decided to following four documents for printing: **5.** *TED 26 (14995) {After Incorporating accepted comments}* **6.** *TED 26 (15013)*		

Sl. No.	Subject	Background	Status and Decision in the previous Committee Meeting	Current Status
		7. *TED 26 (15014)* **8.** *TED 26 (15015)* The committee also decided to send following ten Documents for Wide Circulation for a period of 60 days: **11.** *TED 26 (15007)* **12.** *TED 26 (15008)* **13.** *TED 26 (18368)* **14.** *TED 26 (18373)* **15.** *TED 26 (18374)* **16.** *TED 26 (18375)* **17.** *TED 26 (18377)* **18.** *TED 26 (18378)* **19.** *TED 26 (18379)* **20.** *TED 26 (18380)* **Status in 25th Meeting:** Following Documents have been uploaded on BIS Portal for Wide Circulation and are due for HoD's Approval for the circulation: **1.** *TED 26 (15007)* **2.** *TED 26 (15008)* **3.** *TED 26 (18368)* **4.** *TED 26 (18373)* **5.** *TED 26 (18374)* **6.** *TED 26 (18375)* **7.** *TED 26 (18377)* *Following documents will be sent for WC Shortly:* *1. TED 26 (18378)* *2. TED 26 (18379)* *3. TED 26 (18380)* Other four documents which the committee finalized in the last meeting, give cross references to other standards of this (CNG) series which are under the process of revision.		

Sl. No.	Subject	Background	Status and Decision in the previous Committee Meeting	Current Status
		Hence difficulty is being faced to prepare the final draft of these standards as year of publication and title of other standards will be different after the revision. The committee may deliberate the issue. **Decision in the 25th Meeting:** The committee deliberated the issue and decided that all the documents will be finalized only after all the documents complete their Wide circulation period so that cross referencing problem can be addressed.		
2.	**Adoption of AIS 157** (SAFETY AND PROCEDURAL REQUIREMENTS FOR TYPE APPROVAL OF COMPRESSED GASEOUS HYDROGEN FUEL CELL VEHICLES) **as Indian Standard**	In the last (24th) meeting of SC TED 26, The committee noted that SC TED 27 (Electric and Hybrid Vehicles Sectional Committee), is in the process of adopting AIS 157 as Indian Standard. The committee also noted that 'Fuel Cell' falls under the Scope of SC TED 26 and not under the scope of SC TED 27. {*Scope of SC TED 26: Standardization of Fuel System Components for Automotive Vehicles using New and Renewable Energy Sources such as Compressed Natural Gas (CNG), Liquefied Petroleum Gas (LPG), Bio-Gas, Hydrogen/Methane Blends, Bio-diesel/diesel blends, alcohol (Ethanol/Methanol)-petrol blends Hydrogen, <u>Fuel Cell and their installation requirements.</u>*	**Status in 26th Meeting:** The draft will be sent for wide circulation once the thoroughly deliberated draft is received from Fuel Cell Panel (Convenor : Tata Motors) **Decision in the 26th Meeting:** The committee discussed the matter and requested Shri P S Gowrishankar, Convener of Panel 6, to promptly organize the next Panel 6 meeting and submit the discussed draft, inclusive of all amendments, for the adoption of AIS 157 as Indian Standards to BIS Secretariat.	Panel Convener Shri Gowrishankar through email dt. 14/08/2024 submitted the revised draft based on second amendment to AIS 157. Additionally, The decision on the matter of referring the UN ECE Guidelines and other International Regulations / Standards (i.e. GTR

Sl. No.	Subject	Background	Status and Decision in the previous Committee Meeting	Current Status
		Scope of SC TED 27: Standardization of Electric and Hybrid vehicles and their components} Hence the committee recommended the Adoption work of AIS 157 to be shifted from SC TED 27 to SC TED 26. The committee also requested member secretary to raise this issue in the next meeting of SC TED 27 and also to seek suitable directions from TEDC. **Status in 25th Meeting:** The matter was discussed in the last (29th) meeting of Transport Engineering Division Council (TEDC) held on 22/12/2022, and it was decided to transfer the conversion work of AIS 157 from SC TED 27 to SC TED 26, along with Fuel Cell Panel (Panel 8 of SC TED 27). The committee may deliberate and decide the further course of action for the panel along with the document. **Decision in the 25th Meeting:** The committee noted the decision of TEDC. It was decided to keep Tata Motors as the convener of the Fuel cell panel as they were the convener when the panel was	Member secretary was requested to send the draft submitted by Panel 6 for wide circulation of 60 days **Status in 27th Meeting:** The Panel 6 Convener, Shri P S Gowrishankar, prepared the Working Draft based on AIS 157 and submitted to BIS for internal circulation within the committee. The Working Draft was circulated among the committee members dt. 25/04/2024 for comments after approval from chairperson, TED 26. Subsequently, A Panel Meeting was organized by the Panel Convener dt. 17/05/2024 to discuss and resolve the comments received. The minutes of the meeting were circulated through BIS Portal dt. 20/05/2024 and also attached at Error! Reference source not found. for reference. **Decision in the 27th Meeting:** The committee noted the progress on the document and approved the document for Wide Circulation of 60 days.	13, SAE Standards etc.) Where Indian Standards are already available, is still pending. In view of the above, the committee may please look into the matter and decide the further course of action.

Sl. No.	Subject	Background	Status and Decision in the previous Committee Meeting	Current Status
		working under the guidance of SC TED 27. Mr. Shailendra Kumar from Tata Motors informed the committee that AISC panel is discussing a draft amendment to AIS 157. The committee hence asked Tata Motors to provide the final draft to BIS Within one month time. The committee also asked member secretary to send the draft for a wide circulation of 60 days, once the draft is received from Tata Motors. The comments received on the draft can then be discussed in next SC TED 26 Meeting.	The matter of referring the UN ECE Guidelines and other International Regulations / Standards (i.e. GTR 13, SAE Standards etc.) Where Indian Standards are already available, was also discussed in the meeting but No Consensus was reached. The chairman then requested all members to thoroughly analyze the matter and present their comments at the next meeting. It was decided to take a final call on the matter in the next meeting.	
3.	**Adoption of AIS 195** (SAFETY AND PROCEDURAL REQUIREMENTS FOR TYPE APPROVAL OF COMPRESSED GASEOUS HYDROGEN IC ENGINE POWERED	In previous meeting, The committee constituted Panel 7 to formulate standards related to Hydrogen IC Engine Powered Vehicles.	**Status in 27th Meeting:** The Panel Convener, Shri Muthu Kumar, prepared two Working Drafts based on AIS 195 for M&N Category vehicles and for CEVs and submitted the same to BIS for internal circulation within the committee. The Working Drafts were circulated among the committee members dt. 15/05/2024 for comments after approval from chairperson, TED 26. Subsequently, A Panel Meeting was organized by the Panel Convener dt. 28/05/2024 to discuss and	An email dated 16/10/2024 was received from Shri Muthu Kumar, Panel Convener of Ashok Leyland, regarding the scheduling of a panel meeting on 25/10/2024. The meeting was successfully conducted

Sl. No.	Subject	Background	Status and Decision in the previous Committee Meeting	Current Status
	VEHICLES) **as Indian Standard**		resolve the comments received. The minutes of the meeting were circulated through BIS Portal dt. 29/05/2024 and also attached at Error! Reference source not found. of the agenda of 27th meeting for reference. The Committee may deliberate and decide. **Decision of 27th Meeting:** The committee noted that progress on the document and approved the document for Wide Circulation of 60 days. The matter of referring the UN ECE Guidelines and other International Regulations / Standards (i.e. GTR 13, SAE Standards etc.) Where Indian Standards are already available, was also discussed in the meeting but No Consensus was reached. The chairman then requested all members to thoroughly analyze the matter and present their comments at the next meeting. It was decided to take a final call on the matter in the next meeting.	by M/s Ashok Leyland on 25/10/2024. Minutes of meeting is attached at **Annex- 7** same has been circulated on BIS portal and third Panel – 7 meeting has been conducted by Shri Muthu Kumar, Ashok Leyland on 11/12/2024. The minutes of the meeting has been circulated through BIS portal and the same has been attached at **Annex- 8** for reference. Additionally, The decision on the matter of referring the UN ECE Guidelines and other International

Sl. No.	Subject	Background	Status and Decision in the previous Committee Meeting	Current Status
				Regulations / Standards (i.e. GTR 13, SAE Standards etc.) Where Indian Standards are already available, is still pending. In view of the above, the committee may please look into the matter and decide the further course of action.
4.	**TED 26(26637):** Road vehicles - Compressed gaseous hydrogen (CGH2) and hydrogen /natural gas blends fuel systems- Part 1: Safety requirements	Ministry of New and Renewable Energy (MNRE), Government of India launched the 'National Green Hydrogen Mission' and under this mission, MNRE had constituted a working group (WG) consisting of representatives from relevant Ministries, Government agencies, Standardization and Certification bodies, and Industry to establish the Green Hydrogen ecosystem. Accordingly, the WG in its second set of recommendations has recommended the adoption of various international standards related to equipment and processes to be deployed across the hydrogen value chain. MNRE has requested the Bureau of Indian Standards for immediate (Highest Priority) adoption of International Codes and Standards as recommended by the WG. Out of these, the following standard pertain to Automotive Vehicles Running on Non-conventional Energy Sources Sectional Committee, TED 26 : **1.** ISO 21266-1:2018 Road vehicles — Compressed gaseous hydrogen (CGH2) and hydrogen/natural gas blends fuel systems Part 1: Safety requirements {TED 26(26637)}		
5.	**TED 26(2663**			

Sl. No.	Subject	Background	Status and Decision in the previous Committee Meeting	Current Status
	8): Road Vehicles - Compressed Gaseous Hydrogen (Cgh2) And Hydrogen/Natural Gas Blends Fuel Systems Part 2 Test Methods	**2.** ISO 21266-2:2018 Road vehicles — Compressed gaseous hydrogen (CGH2) and hydrogen/natural gas blends fuel systems Part 2: Test methods {TED 26(26638)} In view of the above, Chairperson, TED 26 was requested to accord his approval for sending the National Foreword Corresponding to this document for Wide Circulation of 60 days. After receipt of approval through email dt. 23/09/2024, The National forewords corresponding to these documents have been sent for wide circulation through BIS Portal. The drafts have completed their wide circulation period. No comments have been received. The committee may deliberate and decide.		

ITEM 4 REVIEW OF INDIAN STANDARDS

4.1 As per the statutory requirement of the Bureau, every standard should be reviewed by the Sectional Committee responsible not more than five years after publication, reaffirmation or revision to establish whether it is still current. Circumstances may lead to any earlier review, too.

When reviewing a standard, a committee has five options available:

a) Reaffirmation indicating continuing current of the standard without change;
b) Amendment and reaffirmation indicating the continuing currently of standard after necessary changes to bring it up to date;
c) Revision involving the routine procedure for new project and reaffirm for time being;
d) declaration of obsolescence indicating by amendment that the standard is not recommended for use in new equipment but needs to be retained to provide for the servicing of existing equipment that is expected to have a long working life;
e) Withdrawal indicating that the standard is no longer needed.

4.2 As on-going activity, as indicated at 4.1 above, Sectional Committee reviews the Indian Standards formulated by it at an interval of five years from the date of publication/last review. Following standard are falling due for review this year, i.e. 2024-25:

S. No.	IS Number	IS Title	Decision / Discussion of the committee in its last (27th) meeting
1.	IS 15715: 2008	Road vehicles - Compressed natural gas (CNG) fuel system	Final draft for revision of this standard has

		components - Conduit (Ventilation Hose)	been approved by the committee for printing.
2.	IS 15720: 2008	Road vehicles - Compressed natural gas (CNG) fuel system components - Compartments/sub - Compartments	Final draft for revision of this standard has been approved by the committee for printing.
3.	IS 15870: 2009	Road vehicles - Use of compressed natural gas (CNG) fuel system in internal combustion engine vehicles - Code of practice	The committee requested Panel 1 to take up this standard for examination.
4.	IS/ISO 17268: 2020	Gaseous Hydrogen Land Vehicle Refuelling Connection Devices	The committee assigned the work of review of this standard to Panel 3.

The committee may deliberate and decide.

ITEM 5 PROGRAM OF WORK

5.1 Detailed Program of Work of SC TED 26 has been given at **Annex- 9.** The committee may please note.

ITEM 6 INTERNATIONAL ACTIVITIES

6.1 India holds '**P**' membership for ISO/TC 22/SC 41 Specific aspects for gaseous fuels and SC TED 26 has the voting rights for ISO/TC 22/SC 41.

6.2 India holds '**P**' membership for ISO/TC 197 Hydrogen technologies and SC TED 26 has the voting rights for ISO/TC 197.

6.3 India holds '**P**' membership for ISO TC 22 SC 37 Electrically propelled vehicles and SC TED 26 has the Ballot Monitor rights for ISO TC 22 SC 37.

6.4 The Program of Work of aforementioned ISO Technical committees may be accessed through following links:

a) PoW of ISO/TC 22/SC 41

b) PoW of ISO/TC 197

c) PoW of ISO/TC 22/SC 37

6.5 The plenary Meeting of ISO TC 197 was held on 12-13 December 2024. From SC TED 26, Following delegation participated in the meeting through virtual mode:

1. Dr Dhiraj Kumar Mahajan, Associate Professor, IIT Ropar (*Head of Delegation)*
2. Shri Gaurav Jayaswal, Scientist C & Member Secretary, TED 26 (NMC to ISO TC 197)

The committee may please note.

ITEM 7 DATE AND PLACE FOR THE NEXT MEETING

ITEM 8 ANY OTHER BUSINESS

ANNEX- 1
(*Item* **2.2**)

AUTOMOTIVE VEHICLES RUNNING ON NON-CONVENTIONAL ENERGY SOURCES SECTIONAL COMMITTEE, TED 26

25th Meeting	29th December 2022	Webex
26th Meeting	26th September 2023	Webex
27th Meeting	31st May 2024	Webex

Sl. No.	**NAME OF THE ORGANIZATION**	**REPRESENTED BY** Principal member (*Alternate member*) (*Young Professional*)	**Attendance of the last three meetings**			
			25th	**26th**	**27th**	**Total**
3.	Automotive Research Association of India (ARAI)	Dr S S Thipse (Chairperson) Shri A D Dekate (P)	Y	Y	Y	3/3
4.	Ashok Leyland Ltd.	Ms. Suchismita C. (P) Shri Muthukumar N (A)	N	Y	Y	2/3
5.	Automotive Component Manufactures Associationof India (ACMA)	Shri Sanjay Tank (P) Ms. Seema Babal (A)	Y	N	Y	2/3
6.	A B Process Technologies	Shri Kunal Chopde	-	Y	N	1/3
7.	Bajaj Auto Ltd., Pune	Shri Milind J. Pagare (P) Shri Arvind V. Kumbhar (A) Shri Abhay Kumar(YP)	Y	Y	Y	3/3
8.	Bosch Limited, Bengaluru	Shri Bharadwaj M. Krishnamurthy (P) Shri Vikram K (A)	N	N	Y	1/3
9.	Central Institute of RoadTransport, Pune	Shri Samir Sattigeri (P) Shri V. V. Joshi (A)	N	N	Y	1/3
10.	Central Pollution Control Board	Shri Pankaj Aggarwal (P) Shri Ankush Tewani (A)	-	-	-	-
11.	Shigan Quantum Technologies Limited, Gurugram	Shri Shishir Agrawal (P) Shri Gagan Agrawal (A)	N	Y	N	1/3
12.	Indian Auto LPG Coalition, Faridabad	Shri Shishir Agrawal (P) Shri Suyash Gupta (A)	N	Y	Y	2/3
13.	Indian Institute of Petroleum, Dehradun	Shri Wittison Kamei (P) Shri Robindro Lairenlakpam (A)	Y	Y	N	2/3
14.	Indian Institute of Science, Bengaluru	Prof. R.V. Ravikrishna (P)	N	Y	Y	2/3

Sl. No.	NAME OF THE ORGANIZATION	REPRESENTED BY Principal member (*Alternate member*) (*Young Professional*)	Attendance of the last three meetings			
			25th	26th	27th	Total
15.	Indian Institute of Technology Ropar, Punjab	Shri Dhiraj Kumar Mahajan (P) Dr. Debaprasad Mandal (A)	Y	Y	Y	3/3
16.	Indian Oil Corporation Ltd., (R & D Centre), Faridabad	Dr. M Sithananthan (P)	Y	Y	Y	3/3
17.	Indian Rubber Mfrs. Research Association, Thane, Mumbai	Dr K Raj Kumar (P) Dr Bharat Kapgate (A)	Y	N	N	1/3
18.	International Centre for Automotive Technology (ICAT)	Shri Pritam Sawariya (P) Shri Deepak Joshi (A) Shri Amol Kumar (A)	N	Y	N	1/3
19.	Mahindra & Mahindra Ltd., Mumbai	Shri Rajamani Parthiban (P) Shri Shailesh Kulkarni (A)	N	Y	Y	2/3
20.	Mahindra & Mahindra Ltd. (Truck and Bus Division)	Shri V G Kulkarni (P)	Y	N	Y	1/3
21.	Maruti Suzuki IndiaLimited, Gurgaon	Shri Gururaj Ravi Shri Arun Kumar (A) Shri Rajesh Kumar (YP)	N	Y	Y	2/3
22.	Minda Emer TechnologiesLimited, Gurgaon	Shri Vivek Jain (P) Shri Bibhuti Kumar (A)	N	Y	Y	2/3
23.	Ministry of New and Renewable Energy, NewDelhi	Shri Dipesh Pherwani (P)	N	N	Y	1/3
24.	Petroleum and Explosive Safety Organization, Nagpur	Shri D K Gupta (P) Shri Vivek Kumar (A)	N	Y	N	1/3
25.	Renault India Private Limited, Mumbai	Shri Rajendra Khile (P) Shri Vijay Dinakaran (A) Shri Jebin Jowhar (YP)	-	Y	Y	2/2
26.	Rohan BRC Gas Equipment Pvt. Ltd, Ahmedabad	Shri Stefano De Carolis (P) Shri Parthiv Shukla (A)	Y	N	N	1/3
27.	Society of Indian Automobile Manufacturers, New Delhi	Shri P K Banerjee (P) Dr. Sandeep Garg (A)	N	Y	Y	2/3
28.	Swagelok – Bombay FluidSystem components Pvt. Ltd.	Shri Sachin Koulgi (P) Shri Harish Takke (A)	Y	Y	Y	3/3
29.	Tata Motors Ltd.	Shri P. S. Gowrishankar (P) Shri Shailendra Dewangan (A)	Y	Y	Y	3/3
30.	Vanaz Engineers Ltd. Pune	Shri S J Vispute (P) Shri Hemant Joshi (A) Shri A A Udhoji (YP)	Y	Y	N	2/3

ANNEX- 2
(*Item **2.5***)

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Yogesh Sukdev Badgujar

Sales | Business Development | Key Account Management | CRM

Experienced Sales Manager with rich & qualitative experience of 12+ years in **Key account management** majorly in automotive business; targeting growth- oriented opportunities with reputed organization.

yogeshbadgujar11@gmail.com +91-9960845952 linkedin.com/in/yogesh-s-badgujar-16921735

Core Competencies

Sales
Business Development
Key Account Management
Project Management
Sales Training & Leadership

Personal Details

Date of Birth:

11th September 1986

Languages Known:

English, Hindi, Marathi

Address:

03, Shivam Nitya,
Chaudhary Park, Wakad
Pune- 411057

Profile Summary

- Possess an integrated set of competencies in key functional areas like **Sales**, **Business Development, Key account Management and CRM**
- Gained extensive exposure in **Project Management** for execution of various automotive projects
- Exposure to diversified segments of the industry like Automotive, Industrial, Off-road Vehicles, Engines, Compressors etc. in span of 12 years of career
- Experienced in various Product Installation Trainings to OEMs like Tata Motors, Mahindra and Mahindra and Force Motors as a part of "Value Selling" initiative of the organization.

Notable Accomplishments

- Key Account Management:

  Forecasting, Planning and execution and maintained Vendor Rating for all Automotive Customer above 95%

  Price revisions based on the RM/Forex indexing
- Instrumental Role in increasing the profitability of the business through various measures

Extracurricular Activities

- Member of organizing committee for event "HR Meet 2011" at BIIB Pune
- Worked as an Organizer in Project committee in 2008 for the cultural event "Shivanjali" at AISSMS COE Pune

Education Details

- PGDM- International Business and Marketing, Balaji Institute of International Business with First Class with Distinction
- B.E. (Mechanical Sandwich) from Savitribai Phule Pune University, Pune (Formerly University of Pune) in 2009 with First Class with Distinction

Organizational Experience

Alleima India Private Limited as Sr Manager- Key Accounts Sales **JUL-23 to present**

Key Result Areas:

- Responsible for NGV customers in India namely Maruti Suzuki, Tata Motors, Ashok Leyland, Volvo Eicher, Force Motors. NGV business contributes 30% (100 Cr) turnover of the organization.
- Exposure in Project Management for all new businesses, ensuring end to end responsibility
- Handling Price negotiations with all key customers for RM/Forex indexing.

Donaldson India Pvt ltd as Manager- OE Sales **May' 21- Jul-23**

Key Result Areas:

- Leading the Compressor and Compressed Air Filtration Business in India, handling the key accounts like Atlas Copco, Ingersoll Rand, Elgi Equipments, Doosan
- Successfully established the distributor network for the Compressed Air Filtration Business in India

Swagelok – Bombay Fluid System Components as Sales Manager- OE Sales **May-18 to Jul-21**

Key Result Areas:

- Leading the Alternate Fuel division which contributes 40% (10 Cr) turnover of the business Unit, handling the key accounts like Tata Motors, Mahindra and Mahindra, Force Motors, Maruti Suzuki, Ashok Leyland, Greaves Cotton, Bajaj Auto etc.
- Exposure in Project Management for all new businesses, ensuring end to end responsibility • Handling Price negotiations with all key customers for RM/Forex indexing.

Previous Experience

Mann and Hummel Filter Private Limited as Asst. Manager- Sales **JUL'15-May'18**

Key Result Areas:

- Responsible for over 35% sales of the business unit Sales target from the key customers like – Mahindra and Mahindra, Atlas Copco (Air Compressor), Kirloskar Group, Tata Motors, John Deere, Wirtgen.
- Pivotal in new business acquisition from Mahindra tractors for Crank Case ventilation system, with the close coordination between center on competence in Germany and China.
- Instrumental role in localization Projects of Air Oil Separator products portfolio to improve overall EBIT by 15% with
- Developed crucial accounts for the organization like John Deere, Greaves Cotton etc. generating valid Business case for localization project in India.

Harita Seating Systems Limited (TVS Group) as Asst. Manager- Sales **May'12-Jul'15**

Key Result Areas:

- Single handedly responsible for 60 Cr annual business for west region which was contributing 20% turnover of the organization
- Effectively handled key customer like Tata Motors, John Deere, Mahindra Tractors, TAFE Tractors, JCB, Hyundai Construction equipment etc.

Soft Skill

ANNEX- 3
(*Item **2.5***)

CV Uploaded by representative of M/s Alleima India Private Limited

S.M. SUDHINDRA HATHWAR

Mobile: +91-9590344999| E-Mail: s.hathwar@rediff.com| LinkedIn: linkedin.com/in/SudhindraHathwar

Sales & Marketing Leader | Business Development Head & National Manager

An empathetic & result oriented Business Development Manager with 19+ years of experience in the domain of Sales & Marketing with expertise in Key Account Management, Channel Management, Value Selling & New Product Development

PROFILE SUMMARY

- **Sales Management:** Responsible for profitable growth by value selling & concept or solution providing through team of professionals.
- **Marketing Leader:** Worked in various roles related to sales & marketing throughout the career for companies who hold strong fort in the domain.
- **Products Handled:** Handled Welding consumable, Powder, Job Works (Larsen & Toubro), Metal Powder for 3D printing & Plasma (Oerlikon Metco), Tubes, Wires, Strips, Metal Powder, Capital equipment (SMTIPL).
- **Industry Expert:** Covered various industry segments like Aerospace, Oil & Gas, Refineries, Chemicals, Nuclear, Defense, Automobile, Foundry & Forge, Steel, Cement, Fertilizer, Fabrication, Medical, Process Industries & Engineering.
- **Key Account Management:** Worked as Key Account Manager for Oerlikon Metco & successfully generated revenue streams for the organization.
- **Business Development & Strategy:** Successfully developed & executed strategies related to business which resulted in the growth of the company.
- **Team Management:** Collaborative & veteran team leader experienced in handling cross functional teams throughout.
- **Training & Team Building:** Built teams & trained & mentored professionals to achieve the targets set by the organization.

CORE SKILLS

Sales Management	Key Account Management	Business Strategy
Marketing Management	Team Management	Product Planning
Technical Expert	Channel Management	Area Management
Business Development	New Product Development	Value Selling

EMPLOYMENT PROFILE

ALLEIMA MATERIALS TECHNOLOGY INDIA PVT LTD (Former Sandvik) **Feb'16-Present**

Business Development Manager **Since Jan'18**

- Leads the business development team to develop new business at targeted customers defined at the beginning of the year.
- Works with the sales team to ensure proper transitioning of accounts & manpower along with developing & executing plans for relationship building at all levels of the customer accounts.
- Handled new product development & product promotions through seminars, exhibitions, road shows etc.
- Built team, trained the professionals & develops Key Account Templates to capture the right information & leverage the same for the plan.
- Negotiates contracts, agreements, programs & identifies potential untapped markets.

Technical Sales Manager **Feb'16- Dec'17**

- Devised & implemented key marketing programs & campaigns in the market place.
- Expanded the business in identified verticals & managed key accounts independently as well as through a team.
- Handled the tracking of customer information, forecasts & reports & conducted sales presentations.
- Managed, grew & sustained the business of Oerlikon Metco & met the various targets in terms of volumes, profitability, visibility & growth.

OERLIKON METCO (SINGAPORE) PVT LTD | Key Account Manager **Jun'15- Jan'16**

- Devised & implemented key marketing programs & campaigns in the market place.
- Conducted individual & group sales presentations & expanded the business in identified verticals.
- Met various targets in terms of volumes, profitability, visibility & growth.
- Handled micro level planning of all above big & small activity. Also handled key accounts independently & as a team member.

SANDVIK MATERIALS TECHNOLOGY INDIA PVT LTD | Manager- Sales & Marketing **Jul'10- May'15**

- Handled Product Introduction, New Business Development, & Product Promotions through seminars, exhibitions & road shows.
- Implemented business strategies to accomplish the goals set by the organization.

- Was responsible for achieving area order booking target. Handled Micro Level Planning of all big & small activities.
- Created team with National Sales Manager & Product Managers, & developed the team to achieve the targets.
- Efficiently handled different product areas of SMT.

L&T WELDING PRODUCTS BUSINESS, BANGALORE | Application Specialist **Dec'05- Jul'10**

- Handled the marketing operations of welding consumables in Bangalore, Shivmoga & Mysore regions & was responsible for market development & revenue generation.
- Generated leads, interacted with prospective customers, conducted product demonstrations & followed up to close the deals
- Formulated policies & procedures for implementation of business activities in accordance with overall business strategies for the region.
- Organized various promotional activities & participated in various events, industrial exhibitions to improve brand visibility & to enhance sales.
- Inducted qualified channel partners & stockiest, & provided them training & marketing support & monitored their performance to achieve the target.

PEEKAY STEEL CASTING PVT LTD, COIMBATORE | NDT IN-Charge **Nov'03- Dec'05**

- Was responsible for the interpretation of Radiographs of castings received from the vendors & for the preparation of the shooting sketches for the same.
- Handled the marking of identified defects on the castings & assisted welders in repairing the defects.
- Participated in internal audit, third party inspection, & monitored the MPT & DPT of castings, recorded the results of each casting & took necessary action to improve the quality.
- Inducted qualified channel vendors & provided them training & support & monitored their performance to achieve the defined quality.

ACADEMICS & CERTIFICATIONS

- **Masters in Business Administration:** KSOU, Mysore, Karnataka | **Year**
- **Bachelors in Mechanical Engineering:** Sri Jagadguru Mallikarjuna Murugarajendra Institute of Technology, Chitradurga, Karnataka | 2003.
- **Strategic Management Certification Program:** IIM-Kozhikode.
- **Radiography Testing Level-II:** BARC, Mumbai.
- **ASNT Level-II** in Radiography Testing, Ultrasonic Testing, Magnetic Particle Testing & Liquid Penetrate Testing.
- **Certified Welding Inspector:** WRI, BHEL, Thyrichy.
- **ISO 9001:2008**- Lead Auditor Training (By TUV- India).
- **Software:** C, Pro-E, Auto Cad, Ansys.

CAREER HIGHLIGHTS

- Received **Best Performer Award** for 2010-11 in Sandvik Asia Pvt Ltd.
- Worked as **Area Manager, Technical Sales Manager, Key Account Manager, Product Manager APAC** for various organisations.
- Developed new business of **Rs. 45 cr** in 2021 by introducing new products & solutions.
- Developed business of **Rs. 50 cr** in 2018 & of Rs. 115 cr in 2021.
- Solved the problems of the customers & retained **20 cr customers** in the process.
- Achieved average sales growth of **20% yoy** by & additional business through appointing channel partners & freelancers.
- By adopting end customer approach, increased the market share **from 35% to 45%.**
- Practiced value-based selling through developing new application & new business which helped the territory to grow from **1 MUSD** to **6 MUSD** within **4 years.**
- Took lead in developing regional product planning for **APAC region.**
- Presented technical papers in **International Conferences.**
- **Added many new customers** by application development & value selling.
- Reduced the rejection rate of radiographs **by 15%** by training the vendors for Peekay Steel.
- Reduced the expenses **by 20%** after the cost analysis of NDT Department.

TRAININGS ATTENDED

- Business communication skills- VitamineC.
- Sales Training- George Associates.
- Metallurgy training- Sandvik R&D.
- Special Training on Sales & Marketing- Coromunt.
- Finance for non-finance- Anil Lamba.

PERSONAL DETAILS

- **Date of Birth:** 18th April, 1982.
- **Languages Known:** English, Hindi, Kannada, Tamil
- **Address:** #100, Bhuvaraha, 2nd main, Pushpagirinagar, Hoskerehalli kerekodi, BSK 3rd stage, Bangalore-85.

ANNEX- 4
(*Item* **2.5**)

RE: [External]RE: Request for membership of Sectional committee meeting ...
Ashish163.Kumar@ril.com | Thu, 12 Dec 2024 6:48:50 PM +0530 | 4 minute(s) read

Dear Sir,

Good evening!

I am obliged for your strong consideration.

Certainly I look forward to attend these meetings on regular basis.

@gaurav.jayaswal pls share nomination proforma and help me to fill-out.

Thanks & Regards;
Ashish Kumar

From: Dr. S. S. Thipse <thipse.edl@araiindia.com>
Sent: Thursday, December 12, 2024 9:46 AM
To: Ashish163 Kumar <Ashish163.Kumar@ril.com>
Cc: gaurav.jayaswal@bis.gov.in; Sharad1 Gupta <Sharad1.Gupta@ril.com>; Abhilash Savidhan <Abhilash.Savidhan@ril.com>; ted26@bis.gov.in
Subject: [External]RE: Request for membership of Sectional committee meeting & participation in the upcoming meeting scheduled on 19th Dec, 24 @ ARAI, Pune

Caution: The e-mail below is from an external source. Please do not open attachments or click links unless this email comes from a known sender and you know the content is safe.

Dear Ashish,

Glad to note your interest in contributing to TED-26.

RIL was a member of TED-26 earlier but withdrew its nomination few years ago.

I am ok with reinstating membership of RIL in TED-26.

However this needs to be discussed and agreed by other members in the upcoming TED-26 meeting in ARAI.

Thereafter I can approve membership.

You may fill nomination proforma and send to Mr. Jayaswal who is member secretary of BIS TED-26 for putting up in meeting agenda.

You may be invited to participate in the meeting as an invitee subject to BIS approval.

Regards,

Dr. Thipse
Chairman BIS TED-26

From: Ashish163.Kumar@ril.com <Ashish163.Kumar@ril.com>
Sent: 11 December 2024 17:24
To: ted26@bis.gov.in
Cc: gaurav.jayaswal@bis.gov.in; Dr. S. S. Thipse <thipse.edl@araiindia.com>; Sharad1.Gupta@ril.com; Abhilash.Savidhan@ril.com
Subject: Request for membership of Sectional committee meeting & participation in the upcoming meeting scheduled on 19th Dec,24 @ ARAI, Pune
Importance: High

Dear TED 26 Chairperson,

I hope this email finds you well.

As you aware that Reliance is developing H2 ICE Technology, running H2 ICE Vehicles on public roads, and active participation in panel 7 of TED 26.

I am writing to express my interest in becoming a member of the TED26 Sectional Committee, and to request the opportunity to participate in the upcoming meeting scheduled on 19th Dec,24 @ ARAI, Pune

I **Ashish Kumar and my colleagues** Abhilash Savidhan on behalf of Reliance Industries limited would like to bring our experience and relevant field of expertise to well align with the committee's objectives, and I believe we can contribute meaningfully to the discussions and decision-making processes.

Could you please consider my request for membership or participation in the sectional committee? If there are any specific procedures or forms that need to be completed, I would appreciate guidance on the next steps.

Thank you for your time and consideration. I look forward to the opportunity to contribute to the committee's work.

Thanks & Regards;
Ashish Kumar
+91-9370436635

ANNEX- 5
(*Item* **2.6**)

Minutes of TED 26 P1 (CNG/LPG/Bio-CNG) Panel Meeting

The panel meeting of TED 26 P1 was held virtually on 23rd October 2024 (Wednesday) at 11.00-13.00 under convenorship of Shri. Ajay D. Dekate (GM, SHL, ARAI, Pune). The list of participants is provided in "Annexure-I".

Panel Convenor Shri. Ajay D. Dekate welcomed all participants and briefed about background of this working group (TED 26 - P1). He informed that agenda of panel meeting is to review of published IS standards for LPG and CNG application.

i) Convenor informed that total 11 Nos. of IS standards published by BIS are for review under this group of which 10 Nos. are based on LPG and 1 is based on CNG (Code of Practise). Out of 10 nos of LPG standard, IS 16057 is not applicable to this group as it is for stationary application (Generators, Agriculture Pumps and Sprayers, etc.) and not for automotive purpose.

   BIS has taken the note of it and confirmed that it will be diverted to concern group i.e. TED 02 for IC engine for the stationary application. Committee members also supported and if anyone from this committee (TED 26) willing to represent TED 02 can do the same.

ii) Published LPG and CNG standards have taken references from ECE R-67-02: 2008 & 2010 and AIS 024 & AIS 028 respectively. Convenor informed that present comparison has done with respect to latest available ECE standard i.e. ECE R-67-04: 2023.

iii) Convenor updated, published Indian standards have deviated from ECE regulation R-67 taking into account Indian conditions with respect to:

   a) Inclusion of L category of vehicle;
   b) Inclusion of 'Class 1A' and 'Class 4' for coverage of all category of components based on their operating pressure,
   c) Room temperature changed to 27°C ± 5°C from 20°C ± 5° considering Indian climatic conditions.
   d) Updates given for Inclusion of Cl. No. applicable to *"Changes in technical specifications of a type approved component and extension of approval"* in all LPG standards. Also, table has modified for better clarity and uniformity in the all the IS LPG standards.
   e) Use of latest gas cylinder rules i.e. Gas Cylinder Rules, 2016

Further updates given for inclusion of newly added definition of components, and its general requirement, if any and revision in number of endurance cycle for shut-off valve in IS standards.

iv) The Convenor presented a detailed presentation regarding all published IS standards and highlighted changes and updates that are further required in these standards.

v) Shri. Suyash Gupta, IAC has updated about consideration of blending of 5% to 10% DME blend in LPG. Also, he has suggested to check its feasibility and inclusion of any test from compatibility point of view or performance point of view. Further they will internally review it and provide updates to BIS.

BIS has informed, separate panel has created for DME and its blend to study international standards. It can be discussed in concern committee.

Shri. Shailendra Dewangan, TML updated that DME standard is prepared by PCD 03.

vi) Convenor presented different classes of LPG mentioned in IS standard and its classification and applicability. Class 1A and 4 added for better clarity and to cover all pressure ranges. BIS has suggested, proper elaboration of these class 1 and 1A for uniformity. Modifications suggested as below.

Sr. no.	Class	Present Text	Modification Suggested	Remark, if any
1.0	Class 1	High pressure parts including tubes and fittings containing liquid or vapour LPG at vapour pressure or increased vapour pressure up to 3 000 kPa	High pressure parts including tubes and fittings containing liquid or vapour LPG at vapour pressure or increased vapour pressure below 3 000 kPa and over 2000 kPa above atmospheric pressure	Better clarity
2.0	Class 1A	Components having maximum operating pressure up to 2 000 kPa	Components having maximum operating pressure below 2000 kPa and over 450 kPa above atmospheric pressure	Better clarity
Note: - No changes for Class 2, Class 2A, Class 3 and Class 4.				

vii) Convenor presented CNG IS standard and suggested for replace of "CNG" with "CNG/Bio-CNG/ HCNG" to aligned with present AIS standard and cover all similar fuels.

Shri. Gaurav Jayaswal, BIS has informed that separate standards are being formulated for LNG application.

viii) Shri. Ashwin, Mahindra informed that use of "Bio – Methane" instead of "Bio – CNG" , as it is globally followed. Also, he has given reference of IS 16087-Bio-Gas (Bio-Methane) specification applicable for automotive application also.

BIS has confirmed to review and necessary updates will be given to TED 26 chairperson for adaptation Bio – Methane instead of Bio-CNG in standards.

ix) Shri. Gaurav Jayaswal, BIS has updated about the latest amendment in the BIS policy and formation of sub-group based on field expert. These sub-group undertake study of standards with respect to component and submit its outcome to main group for amendment in the standard, if any. It was accepted by all participants to formulate two group i.e. LPG and CNG at initial level for study of each and every component in details.

Meeting ended with vote of thanks to the Chair.

Annexure-I (List of participants)

Sr. No.	NAME OF ORGANIZATION	NAME OF MEMBER
1.0	M/s Automotive Research Association of India, Pune	Shri. Ajay D. Dekate (Panel Convenor)
2.0	M/s. Bureau of Indian Standard, Delhi	Shri. Gaurav Jayaswal, Member Secretary, TED 26.
3.0	M/s Ashok Leyland Limited, Chennai	Shri. Faustino V
4.0	M/s Ashok Leyland Limited, Chennai	Shri. Hemant Kumar
5.0	M/s Tata Motors Limited, Pune	Shri. Shailendra Dewangan
6.0	M/s Maruti Suzuki India Limited, Gurugram	Shri. Rajesh Kumar
7.0	M/s Mahindra and Mahindra Limited, Mumbai	Shri. Ashwin
8.0	M/s. Indian Auto LPG Coalition (IAC), Haryana	Shri. Suyash Gupta
9.0	M/s Automotive Component Manufacturer Association (ACMA)	Shri. Sanjay Tank
10.0	M/s Society of Indian Automobile Manufacturers (SIAM), Delhi	Dr. Sandeep Garg
11.0	M/s Society of Indian Automobile Manufacturers (SIAM), Delhi	Ms. Mukti Prasad
12.0	M/s. Vanaz Engg. Ltd., Pune	Shri. Hemant Joshi
13.0	M/s Swagelok Bombay (Bombay Fluid System Components Private Limited), Mumbai	Shri. Ranjit Ubale
14.0	M/s Bosch Limited, Bengaluru	Shri. Siddharadha V
15.0	M/s. Minda Westport Technologies Limited, Haryana	Shri. Vivek Jain

ANNEX- 6
(*Item* **2.6**)

Minutes of TED 26-P5 panel meeting: Panel for Ethanol / Methanol / Bio-Diesel / Flex-Fuels

The panel meeting of TED 26 P5 was held virtually on 28th October 2024 (Monday) at 10:30 AM to 11:30 AM under convenorship of Shri Gururaj Ravi (VP, Global regulatory affairs & policy, MSIL, Gurugram). The list of participants areattached in 'Annexure-I'.

Panel Convenor Shri. Gururaj Ravi welcomed all the participants and briefed about background of this working group (TED 26 – P5). He informed that agenda of panel meeting is to examine the international standards for Fuel Injectors andHoses and determining their viability for adoption as Indian standards.

A. Based on Panel convenor direction, Mr. Rajesh Kumar (AGM, Regulations, MSIL) shared the summary ofinternationally available standards which may be relevant for India [refer 'Annexure-II'].
    - Primarily Fuel pump, fuel hose & Fuel injectors have been identified under TED-26 scope for which standardneed to be made which shall be compatible for following fuels: Ethanol/ FFV, Methanol & Bio-diesel.

- <u>Fuel hose:</u>
    - 02 no ISO standards for Fuel hose identified which may be helpful in deriving Indian Standard: ISO19013-2:2016 (Methanol compatible) & ISO 19013-1:2019 (Bio-diesel compatible).
    - ISO std. for Fuel hose compatible with Ethanol/ FFV could not be found based on study done so far.
- <u>Fuel pump:</u>
    - 01 no. of Brazilian standard identified for Fuel pump ABNT NBR 15754 compatible with Ethanol/ FFV.For Methanol & Bio-diesel, no Brazilian std identified.
    - No ISO standards have been identified so far for Ethanol/ FFV, Methanol & Bio-diesel
- <u>Fuel injectors:</u>
    - Based on study done so far, no international standards have been identified for Fuel injectorscompatible with Ethanol/ FFV, Methanol & Bio-diesel

B. Panel convenor requested members to share their views & comeback with additional relevant internationalstandards (if exist) based on their expertise in the next panel meeting.

C. M/s TML shared that EMS manufacturers may contribute further in formulating these standards based on theirinternal test procedure on which M/s Bosch shared that they will discuss with their German counterpart & comeback in next panel meeting.

D. Panel convenor requested BIS support in making available the aforementioned standards for detailed study bymembers.

E. BIS entrusted their full support to members and shared that ISO std. will be made available within two weeks time &Brazilian std will be available by Nov'24 end.

Meeting ended with vote of thanks to the chair

End of Minutes

Annexure-I (List of participants)

S.N.	Name of Organization	Name of Member
1	M/s Maruti Suzuki India Limited	Shri. Gururaj Ravi (Panel convenor)
2	M/s Maruti Suzuki India Limited	Shri. Arun Kumar
3	M/s Maruti Suzuki India Limited	Shri. Rajesh Kumar
4	M/s Society of Indian Automobile Manufacturers (SIAM)	Dr. Sandeep Garg
5	M/s Bureau of Indian Standard	Shri. Gaurav Jayaswal, Member secretary, TED-26
6	M/s Tata Motors Limited	Shri. Shailendra Dewangan
7	M/s Tata Motors Limited	Shri. Deepak Kulkarni
8	M/s Ashok Leyland	Shri. Faustino V
9	M/s Automotive Component Manufacturer Association (ACMA)	Shri. Sanjay Tank
10	M/s Bosch Limited	Shri. Harshit Saxena

ANNEX- 7
(*Item* **2.6**)

2nd TED 26/P-7 Meeting - Panel for Hydrogen IC Engine

Minutes

Name of The Panel	No. of Meeting	Date and Time	Day	Mode : Virtual
TED 26/P-7 Meeting - Panel for Hydrogen IC Engine	**Second (2nd)**	**25th October 2024** from **11:00 AM** onwards	**Friday**	**Virtual Venue :**

PANEL CONVENER:

Shri N Muthukumar, DGM, Regulations & Homologation, Ashok Leyland
Mobile No.: +91 9094001189

Mail ID: Muthukumar.N@ashokleyland.com

Participants:

Sl. No.	Member Name	Organization Name
1.	Dr Balasaheb Shinde	M/s Apurwa Green Energy Research and Technology Private Limited, Pune
2.	Shri Faustino	M/s Ashok Leyland Limited, Chennai
3.	Shri Sanjay Tank	M/s Automotive Component Manufactures Association of India, New Delhi
4.	Shri Ajay D	M/s Automotive Research Association of India, Pune
5.	Shri Abhay Kumar	M/s Bajaj Auto Limited, Pune

6.	Shri Adwitiya	M/s Bosch Limited, Bengaluru
7.	Shri Bharadwaj	M/s Bosch Limited, Bengaluru
8.	Prof. R V Ravikrishna	M/s Indian Institute of Science, Bengaluru
9.	Dr. Dhiraj K Mahajan	M/s Indian Institute of Technology Ropar, Punjab
10.	Shri Rajesh kumar	M/s Maruti Suzuki India Limited, Gurugram
11.	Shri N Joy Kumar	M/s Minda Emer Technologies Limited, Gurugram
12.	Shri Vivek Jain	M/s Minda Emer Technologies Limited, Gurugram
13.	Shri Ritwick Ghosh	M/s National Thermal Power Corporation Limited, New Delhi
14.	Shri Ashish Kumar	M/s Reliance Industries Limited, Bengaluru
15.	Shri Jebin Jowhar	M/s Renault Nissan Technology and Business Centre India Private Limited, Chennai
16.	Dr Sandeep Garg	M/s Society of Indian Automobile Manufacturers (SIAM), Delhi
17.	Shri Ranjit Ubale	M/s Swagelok Bombay, Mumbai
18.	Shri Shailendra Dewangan	M/s Tata Motors Limited, Pune

Minutes of 2nd TED 26 Panel 7 meeting on formulation of Indian Standard on 'Safety and Procedural Requirements for Type Approval of Hydrogen Powered Vehicles (Liquid / Compressed Gaseous Hydrogen)' held on 25th October, 2024 through virtual meeting

1. The 2nd TED 26 Panel 7 meeting to initiate the panel discussions and activities for formulation of BIS standard for the requirements for Type Approval of Hydrogen Powered Vehicles (Liquid / Compressed Gaseous Hydrogen) was held on 25th October, 2024 virtually under the Convenorship of Mr. N. Muthukumar, Deputy General Manager – Product Development.

2. Panel Convener welcomed all the panel members and presented details on the following points (Refer '**Annex**'):
    3. Confirmation of minutes of last meeting
    4. Overview of revised working draft for type approval of hydrogen powered vehicles
    5. Assessment of ISO standards (adopted / WIP) on H2 technologies under ISO/TC 197
    6. Update on ISO FDIS 19887 - Gaseous Hydrogen — Fuel system components
    7. Review of IS 16713 standard on H2 apparatus for stationary application
    8. Working draft for type approval of hydrogen powered construction equipment vehicles
    9. Any other new subjects related to Hydrogen ICE vehicles

10. Confirmation of minutes of the last meeting: No comments were received. Panel noted the information and approved the minutes.

11. Panel Convener explained the proposed structure of H2 ICE Working draft based on ECE R 134-02 series & AIS 157 Amend 2 to the Panel (Refer **'Annex**'). Mr. Ashish, RIL sought clarification on deletion of IS 14682 LUPD reference for compliance to H2 cylinder lateral impact test wrt 200

mm req. from vehicle extremity. Also, he suggested to include audible warning as an alternative to visual warning signal to check H2 leakage. Panel convener clarified that LUPD guard is vehicle level req. & to be complied with external projection as per CMVR. Further, LUPD reference inclusion in working document was India specific proposal, considering emerging technology & in line with ECE R 134-02 series, it was decided in AIS 157 panel meeting to align the standard based on Europe. Hence, LUPD reference deleted in working draft. Also, Panel convenor requested TED 26 panel to provide additional 3 weeks for members to share their comments on revised working draft.

12. Dr. Dhiraj Mahajan, IIT asked to clarify whether 200 mm requirement is from cylinder edge or from Primary closure devices (PCD). Also, he asked a query regarding storage medium of H2 (liquid / gas) in the tank. Panel convener stated that 200 mm requirement is from vehicle extremity to any PCDs like TPRD, Check valve & Shut-off valve. Generally, TPRD will be on outer surface of cylinder & can be relocated with respect to design. Current standard includes the requirements of both gaseous & liquid hydrogen. Liquid hydrogen requirements stated in this working draft shall be taken as reference for the purpose of developmental study and as when development matures on liquid hydrogen storage system, requirements can be further reviewed & suitably considered for approval.

13. Dr. Balasaheb sought clarification on pressure requirements of CNG & H2 cylinder. Panel convener stated that pressure is 200 bar for CNG cylinder & 350 bar for H2 cylinder and mounting position of CNG / H2 cylinders are different based on dimensions of cylinders. Mr. Shailendra, TML opined that mounting requirements of CNG cylinder are explicitly defined in AIS 024 AIS 028 Rev 1. He also confirmed that requirements of H2 cylinder based on ECE R 134-02 series are covered in BIS working drafts of both H2 & Fuel cell vehicles.

14. Panel Convener mentioned that among 21 published ISO standards on H2 technologies under ISO/TC 197 committee, only 3 ISO standards are applicable to H2 ICE vehicles and suggested BIS to share with stakeholders. Mr. Gaurav Jayaswal, BIS informed that IS standards for ISO 14687 (revised as IS 16061) and ISO 17268 were already adopted and published. ISO 19887 can't be circulated since ISO standards mass circulation is not allowed. Instead he suggested to review the F-draft previously circulated by BIS which is similar to ISO 19887.

15. Owing to clarification sought from Panel convener regarding IS 16061 reference, Mr. Shailendra TML informed that ISO 14687 is mentioned in HFCV notification and IS 16061 replacing ISO 14687 is already notified in CMVR for H2 ICE fuel spec. As per HFCV notification, compliance to ISO 14687 or any latest Bureau of Indian Standard can be adopted.

16. Mr. Shailendra, TML was asked to compare ISO standards list for ISO TC 197 (Hydrogen Technologies) and ISO TC 22 SC 41 (Specific aspects for gaseous fuels) standard requirements. He mentioned that Blend % of Hydrogen fuel is not covered in ISO 12619. Panel convener suggested to focus only on Pure hydrogen requirements for the time being.

17. Panel convener briefed the members on detailed comparison study between ISO FDIS 19887 & AIS 195/157 H2 fuel system components. He asked members to share the comments within 3 weeks' time on ISO FDIS 19887 standard.

18. Regarding IS 16713 H2 apparatus for stationary application, Panel convener informed that the said IS 16713 standard specifies reclaimed Isobutene Isoprene (IIR) Rubber— Evaluation procedure which is not applicable to Automotive and Hydrogen detection apparatus – stationary applications details are covered in IS 16253 which is not available free of cost. Mr. Gaurav Jayaswal asked AL to send the standard details to BIS.

19. Working draft – H2 powered CEVs: Ashok Leyland suggested to move the standard to CEV manufacturers since the scope applies to them. Mr. Gaurav informed that Panel 10 has been created for CEVs and that this working draft shall be assigned to them.

20. Mr. Gaurav Jayaswal informed that next TED 26 SC meeting is tentatively scheduled in mid Dec'24 at Pune in physical mode. They are also planning to conduct a seminar on "Green Mobility" standards in Dec'24.

21. Meeting ended with vote of thanks to the Panel convener and all the members.

ANNEX- 8
(*Item* **2.6**)

For BIS use only

3rd TED 26/P-7 Meeting – Hydrogen IC Engine & Hydrogen/Natural gas blends (HCNG) fuel system components Panel

MINUTES

Name of The Panel	Meeting Number	Date and Time	Day	Mode : Virtual
TED 26/ P-7 – Hydrogen IC Engine & Hydrogen/Natural gas blends (HCNG) fuel system components Panel	**3rd**	**11th December, 2024** **11.00 AM onwards**	**Wednesday**	Webex

PANEL CONVENER: Shri Muthu Kumar, Head – Regulations & Homologation, Ashok Leyland
BIS SECRETARIAT: Shri Gaurav Jayaswal, Member Secretary, TED 26

ITEM 0 MEETING ATTENDANCE:

Sl No.	Member Name	Attendee Email
1.	Shri Abhay Kumar_Bajaj Auto Ltd	akumar15@bajajauto.co.in
2.	Shri Ashish Kumar	ashish163.kumar@ril.com
3.	Shri Ashwin_M&M	sraj.ashwin@mahindra.com
4.	Shri Debaprasad Mandal, IIT Ropar	dmandal@iitrpr.ac.in
5.	Shri Dhanraj S	dhanraj.stutzer@aisin-ahl.co.in
6.	Dr Shinde	ceo@apurwagreentech.com
7.	Dr Dhiraj K Mahajan	dhiraj.mahajan@iitrpr.ac.in
8.	Dr M.Sithananthan	sithananthanm@indianoil.in
9.	Shri Faustino Ashok Leyland	faustino.v@ashokleyland.com
10.	Shri Joy - M&M	n.joykumar@mahindra.com
11.	Smt. Mukti Prasad SIAM	mukti@siam.in
12.	Shri Ritwick Ghosh	ritwickghosh@ntpc.co.in
13.	Shri SachinK	sachin.koulgi@swagelok.com
14.	Shri Sanjay Tank - ACMA	sanjay.tank@acma.in
15.	Shri Shailendra Dewangan	shailendra.d@tatamotors.com
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17.	Shri Swagelok	ranjit.ubale@swagelok.com
18.	Shri Venkataguha	venkataguha.v@ril.com
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20.	Shri somashekar	somashekar.hadli@aisin-ahl.co.in

ITEM 1 DISCUSSION & DECISION IN THE PANEL MEETING

1. The 3rd TED 26 Panel 7 meeting to initiate the panel discussions and activities for formulation of BIS standard for the requirements for Type Approval of Hydrogen Powered Vehicles (Liquid / Compressed Gaseous Hydrogen) was held on 11th December, 2024 virtually under the Convenorship of Mr. N. Muthukumar, Head – Regulations & Homologation, Ashok Leyland

2. Panel Convener welcomed all the panel members and presented details on key action points from previous meeting.
    a. Update on working draft (Based on comments from M/s RIL)
    b. Assessment of ISO standards on H2 technologies as per ISO / TC 97
    c. Review of IS 16713 standard on H2 apparatus for stationary application

3. M/s RIL comments on H2 ICE working draft were deliberated in detail. Refer Annexure-1 for the comments & decision taken by Panel-7.

4. Mr. Gaurav Jayaswal suggested to clearly define in the scope of the document itself, whether or not this standard will be applicable for vehicles running on Liquefied Hydrogen, for enhancing clarity.

5. Mr. Shailendra, TML gave an update on ISO TC 197 (Hydrogen Technologies) and ISO TC 22 SC 41 (Specific aspects for gaseous fuels) standard requirements. He shared an overview of unique requirements & common test requirements of both AIS 195 & ISO FDIS 19887 standards.

6. Mr. Gaurav Jayaswal informed the panel that ISO 14687 standard which specifies Quality of H2 for different applications is being revised at ISO Level to include H2 ICE related specifications. M/s RIL opined that based on inputs from Refinery representative, details on limits mainly Sulphur content will be deliberated further.

7. Mr. Gaurav Jayaswal further stated that National Forewords corresponding to ISO 21266 Parts 1 & 2 have been sent for Wide circulation for comments of Committee members and these standards specify minimum safety requirements applicable for the functionality of Compressed gaseous hydrogen (CGH2) and hydrogen/natural gas blends fuel systems on vehicles. Mr. Shailendra, TML suggested the panel to study the ISO standard in line with ECE R 134 for better understanding

8. Existing standard scope applies only for OE built vehicles & not for retrofitment. Dr. Shinde proposed to include retrofitment procedure also in the standard. Panel convener opined that subject on retrofitment needs to be deliberated in TED 26 main panel meeting and to take it up further actions appropriately.

9. TED 26 SC meeting is scheduled on 19th Dec'24 at ARAI, Pune. Mr. Gaurav Jayaswal requested members to physically attend the meeting.

10. Meeting ended with vote of thanks to the Panel convener and all the members.

Annexure -1

Annexure - M/s RIL comments on H2 ICE working draft based on AIS 195 standard					
Clause No.	**Description**	**RIL Proposal**	**Remarks**	**Ref standard**	**Decision taken in today's TED 26 P7 meeting**
3.4	**Hydrogen storage system:** means a pressurized container(s), check valve, pressure relief devices (PRDs) and shut off device that isolate the stored hydrogen from the remainder of the fuel system and the environment.	**Compressed hydrogen storage system (CHSS):** Means a system designed to store compressed hydrogen fuel for a hydrogen fuelled vehicle and composed of a container,container attachments (if any), and allprimary closure devices required to isolatethe stored hydrogen from the remainder of the fuel system and the environment	Hydrogen storage system **change to** Compressedhydrogen storage system (CHSS):In current draft IS; many where CHSS used, hencefor better clarity andalignment with UN ECER134	ECE R134/02 - Clause no. 2.3	Agreed, Details of PCDs (TPRD, Check valve, Shut off valve) to be included in this definition
3.22	**Maximum Working pressure:** MAPW means the maximum pressure to which a component is designed to be subjected to and which is the basis	**Maximum allowable working pressure (MAWP)**: Means the highest gauge pressureto which a container or hydrogen storage system is permitted to operate under normal	Correction of **MAWP abbreviation**	ECE R134/02 - Clause no. 2.15	Agreed

	for determining the strength of the component under consideration.	operating conditions.			
Clause No.	**New Definitions**		**Remarks**	**Ref Standard**	
3.31	**Container Attachments:** mean non-pressure bearing parts attached to the container that provide additional support and/or protection to the container and that may be only temporarily removed for maintenance and/or inspection only with the use of tools.		Referring requirement of Single failure and post crash test; adding these definitions will bring more clarity to test engineer and manufacturer while verification of requirement during test and also alignment with UNECE R134	ECE R134/02 - Clause no. 2.5	Agreed to include this new definition based on ECE R 134
3.32	**Enclosed or semi-enclosed spaces**: Means the special volumes within the vehicle (or the vehicle outline across openings) that are external to the hydrogen system (storage system, fuel cell system, internal combustion engine (ICE) and fuel flow management system)			ECE R134/02 - Clause no. 2.8	Agreed to include this new definition based on ECE R 134
3.33	**Passenger compartment:** means the space for occupant accommodation,bounded by the roof, floor, side walls, doors, outside glazing, front bulkhead and rear bulkhead or rear gate.			ECE R134/02 - Clause no.2.18	Agreed to include this new definition based on ECE R 134
3.34	**Single failure:** means a failure caused by a single event, including any consequential failures resulting from this failure. "			ECE R134/02 - Clause no.2.24	Agreed to include this new definition based on ECE R 134
3.35	**Date of manufacture (of a compressed hydrogen container):** Means the date (month and year) of the proof pressure test or final		Better clarity and alignment with UN ECE R134, i.e. Production date shouldn't be	ECE R134/02 - Clause no. 2.7	Definition to be checked in GCR 2016 & to be moved to IS 16735 standard on H2

	inspection test carried out by the manufacturer		consider as date of manufacture		cylinders under MED 16 committee
3.36	**<u>Hydrogen fueling system or Vehicle fueling system:</u>** which includes the compressed gaseous hydrogen storage system, piping, joints, and components in which hydrogen is present		ECE R134/02 or IS or AIS157- Clause no. 7 (part-III)		Agreed to include this new definition based on ECE R 134
Clause No.	**Description**	**RIL Proposal**	**Remarks**		
7.2.4	In the case where hydrogen storage system is not subjected to frontal impact test, the **<u>CHSS</u>** shall be mounted so that its primary closure devices are located in a position which is rearward of a vertical plane perpendicular to center line of the vehicle and located at least 420 mm rearward from the front edge of the vehicle. In any case the	In the case where hydrogen storage system is not subjected to frontal impact test, the **<u>CHSS</u>** shall be mounted so that its primary closure devices are located in a position which is rearward of a vertical plane perpendicular to center line of the vehicle and located at least 420 mm rearward from the front edge of the vehicle. **In any case the ~~container~~ CHSS should never be the outermost part of the vehicle**	"Container" change to "CHSS" Definition of CHSS and Container are different, hence putting CHSS instead of Container will bring clarity and safety, as CHSS means container and container attachments (if any), and all primary closure devices required to isolate the stored hydrogen from the remainder of the fuel system and the environment.	-----	Agreed

	container should never be the outermost part of the vehicle.				
7.2.5	In the case where hydrogen storage system is not subjected to lateral impact test, the **CHSS** shall be mounted so that its primary closure devices are located in a position which is between the two vertical planes parallel to the center line of vehicle located at least 200 mm inside from the both outermost edge of the vehicle in the proximity of the container.	In the case where hydrogen storage system is not subjected to lateral impact test, the **CHSS** shall be mounted so that its primary closure devices are located in a position which is between the two vertical planes parallel to the center line of vehicle located at least 200 mm inside from the both outermost edge of the vehicle in the proximity of the container. **In any case the ~~container~~ CHSS should never be the outermost part of the vehicle.**		-----	Agreed

	In any case the **container** should never be the outermost part of the vehicle.				
7.10.3	**<u>Concentration limit in enclosed spaces:</u>** Hydrogen gas leakage shall not result in a hydrogen concentration in the air greater than 3.0 percent by volume in the passenger and luggage compartments (Annexure IV, paragraph 2). The requirement is satisfied if it is confirmed that the shut-off valve of the storage system has closed within 5 seconds of	**<u>Concentration limit in enclosed spaces:</u>** Hydrogen gas leakage shall not result in a hydrogen concentration in the air greater than 3.0 percent by volume in the passenger and luggage compartments (Annexure IV, paragraph 2). **<u>For the vehicles where AIS096, AIS098 and AIS099 scope applicable</u>**, the requirement is satisfied if it is confirmed that the shut-off valve of the storage system has closed within 5 seconds of the crash and no leakage from	This clause have three requirements: 1) H2 concentration less than 3% in the passenger and luggage compartments. 2) Requirement satisfy, if shut-off of storage system happens within 5sec after crash. 3) and NO Leakage from storage system. Requirement 1 is ok to meet, but requirement of 2 having challenge to meet for N2, M2, N3 and M3 category of vehicle, as they don't crash sensor and meeting this requirement with or without crash sensor is	-----	To retain existing clause

	the crash and no leakage from the storage system,	the storage system,	difficult. Please correct me if my understanding is wrong for this clause requirements		

ANNEX- 9
(*Item **5.1***)

Detailed Program of Work (PoW) of SC TED 26

Scope : a) Standardization of Fuel System Components for Automotive Vehicles using New and Renewable Energy Sources such as Compressed Natural Gas (CNG), Liquified Natural Gas (LNG), Liquefied Petroleum Gas (LPG), Bio-CNG (CBG), Bio-diesel/diesel blends, alcohol (Ethanol/Methanol)-petrol blends, Hydrogen, Hydrogen/Methane Blends, Fuel Cells, DME, DME-LPG Blends, Ammonia along with other synthetic fuels and their installation requirements. b) Co-ordination of work with ISO/ TC 22 ; ISO/TC 22/SC 41 & ISO/TC 197.

Liaison : ISO TC-22 (P): *Road vehicles* **ISO TC-22 SC-41 (P):** *Specific aspects for gaseous fuels* **ISO TC-197 (P):** *Hydrogen technologies*

SI. No.	IS No.	TITLE	Reaffirm M-Y	No. of Amds	Eqv.
1	IS/ISO 12619-1 : 2014 ISO 12619-1 : 2014 ISO 12619-1 : 2014	Road Vehicles Compressed Gaseous Hydrogen CGH2 And Hydrogen Natural Gas Blend Fuel System Components Part 1: General Requirements And Definitions		-	Identical under dual numbering
2	IS/ISO/IEC 12619-2 : 2014 ISO 12619-2 : 2014 ISO 12619-2 : 2014	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGEN NATURAL GAS BLEND FUEL SYSTEM COMPONENTS PART 2: PERFORMANCE AND GENERAL TEST METHODS		-	Identical under dual numbering
3	IS/ISO 12619-3 : 2014 ISO 12619-3: 2014 ISO 12619-3: 2014	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGEN NATURAL GAS BLEND FUEL SYSTEM COMPONENTS PRESSURE REGULATOR		-	Identical under dual numbering
4	IS/ISO 12619-4 : 2016 ISO 12619-4: 2016 ISO 12619-4: 2016	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGEN NATURAL GAS BLENDS FUEL SYSTEM COMPONENTS CHECK VALVE		-	Identical under dual numbering
5	IS/ISO 12619-5 : 2016 ISO 12619-5: 2016 ISO 12619-5: 2016	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGEN NATURAL GAS BLENDS FUEL SYSTEM COMPONENTS PART 5: MANUAL CYLINDER VALVE		-	Identical under dual numbering
6	IS/ISO 12619-6 : 2017 ISO 12619-6: 2017 ISO 12619-6: 2017	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGENNATURAL GAS BLEND FUEL SYSTEM COMPONENTS AUTOMATIC VALVE		-	Identical under dual numbering
7	IS/ISO 12619-7 : 2017 ISO 12619-7: 2017 ISO 12619-7: 2017	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGENNATURAL GAS BLENDS FUEL SYSTEM COMPONENTS GAS INJECTOR		-	Identical under dual numbering

8	IS/ISO 12619-8 : 2017 ISO 12619-8: 2017 ISO 12619-8: 2017	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGENNATURAL GAS BLENDS FUEL SYSTEM COMPONENTS PRESSURE INDICATOR	-		Identical under dual numbering
9	IS/ISO 12619-9 : 2017 Adoption of ISO 1261 Adoption of ISO 1261	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGENNATURAL GAS BLENDS FUEL SYSTEM COMPONENTS PRESSURE RELIEF VALVE PRV	-		Identical under dual numbering
10	IS/ISO 12619-10 : 2017 ISO 12619-10: 2017 ISO 12619-10: 2017	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGEN NATURAL GAS BLENDS FUEL SYSTEM COMPONENTS PRESSURE RELIEF DEVICE PRD	-		Identical under dual numbering
11	IS/ISO 12619-11 : 2017 ISO 12619-11 : 2017 ISO 12619-11 : 2017	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGEN NATURAL GAS BLENDS FUEL SYSTEM COMPONENTS EXCESS FLOW VALVE	-		Identical under dual numbering
12	IS/ISO 12619-12 : 2017 ISO 12619-12 : 2017 ISO 12619-12 : 2017	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGEN NATURAL GAS BLENDS FUEL SYSTEM COMPONENTS GAS-TIGHT HOUSING AND VENTILATION HOSES	-		Identical under dual numbering
13	IS/ISO 12619-13 : 2017 ISO 12619-13 : 2017 ISO 12619-13 : 2017	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGEN NATURAL GAS BLENDS FUEL SYSTEM COMPONENTS RIGID FUEL LINE IN STAINLESS STEEL	-		Identical under dual numbering
14	IS/ISO 12619-14 : 2017 ISO 12619-14: 2017 ISO 12619-14: 2017	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGEN NATURAL GAS BLENDS FUEL SYSTEM COMPONENTS FLEXIBLE FUEL LINE	-		Identical under dual numbering
15	IS/ISO 12619-15 : 2017 ISO 12619-15: 2017 ISO 12619-15: 2017	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGENNATURAL GAS BLENDS FUEL SYSTEM COMPONENTS FILTER	-		Identical under dual numbering
16	IS/ISO 12619-16 : 2017 ISO 12619-1 : 2014 ISO 12619-1 : 2014 IS 15710 : 2006	Road Vehicles Compressed Gaseous Hydrogen CGH2 And Hydrogen Natural Gas Blend Fuel System Components Part 1: General Requirements And Definitions	-		Identical under dual numbering
17	ISO 15500-1 Reviewed In : 2021 ISO 15500-1: 2000	Road vehicles - Compressed natural gas (CNG) fuel system components - General requirements and definitions	September, 2021	1	Modified/Technically Equivalent

18	IS 15711 : 2006 Reviewed In : 2021 ISO 15500-2: 2001	Road vehicles - Compressed natural gas (CNG) fuel system components - Performance and general test methods	September, 2021		1	Modified/Technically Equivalent
19	IS 15712 : 2006 Reviewed In : 2021 ISO 15500-6: 2001	Road vehicles - Compressed natural gas (CNG) fuel system components - Automatic valve (Solenoid Valve)	September, 2021		1	Modified/Technically Equivalent
20	IS 15713 : 2006 Reviewed In : 2021 ISO 15500-9: 2001	Road vehicles - Compressed natural gas (CNG) fuel system components - Pressure regulator	September, 2021		1	Modified/Technically Equivalent
21	IS 15714 : 2006 Reviewed In : 2021 ISO 15500-11: 2001	Road vehicles - Compressed natural gas (CNG) fuel system components - Gas/air mixer	September, 2021		1	Modified/Technically Equivalent
22	IS 15715 : 2008 Reviewed In : 2019	ROAD VEHICLES - COMPRESSED NATURAL GAS (CNG)/LIQUEFIED PETROLEUM GAS (LPG) FUEL SYSTEM COMPONENTS - CONDUIT (VENTILATION HOSE)	December, 2019		1	Indigenous
23	IS 15716 : 2006 Reviewed In : 2021	Road vehicles - Compressed natural gas (CNG) fuel system components - Cng high pressure fuel line (Rigid) with end connections [having pressure exceeding 2.15 mpa (21.5 Bar)]	September, 2021		2	Indigenous
24	IS 15717 : 2006 Reviewed In : 2021	ROAD VEHICLES - COMPRESSED NATURAL GAS (CNG)/ LIQUEFIED PETROLEUM GAS (LPG) FUEL SYSTEM COMPONENTS - PETROL VALVE (AUTOMATIC/MANUAL)	September, 2021		2	Indigenous
25	IS 15718 : 2006 Reviewed In : 2021	Road vehicles - Compressed natural gas (CNG) fuel system components - Cng high pressure fuel line (Flexible Hose) with end connections [having service pressure exceeding 2.15 mpa (21.5 Bar)]	September, 2021	-		Indigenous
26	IS 15719 : 2006 Reviewed In : 2021	Road vehicles - Compressed natural gas (CNG) fuel system components - Electrical wiring kit	September, 2021		1	Indigenous
27	IS 15720 : 2008 Reviewed In : 2019	ROAD VEHICLES - COMPRESSED NATURAL GAS (CNG) AND LIQUEFIED PETROLEUM GAS (LPG) FUEL SYSTEM COMPONENTS - COMPART	December, 2019		1	Indigenous
28	IS 15721 : 2006 Reviewed In : 2021	ROAD VEHICLES - COMPRESSED NATURAL GAS (CNG) AND LIQUEFIED PETROLEUM GAS (LPG) - FIRE RETARDANT MATERIAL FOR SEAT, UPHOLSTERY, ROOF AND SIDE LINING	September, 2021		1	Indigenous

29	IS 15722 : 2006 Reviewed In : 2021	ROAD VEHICLES - COMPRESSED NATURAL GAS (CNG) FUEL SYSTEM COMPONENTS - CNG LOW-PRESSURE FLEXIBLE FUEL LINE WITH END CONNECTIONS [CNG FUEL LINE HAVING PRESSURE NOT EXCEEDING 2.15 MPa (21.5 BAR)]	September, 2021		1	Indigenous
30	IS 15723 : 2006 Reviewed In : 2021	Road vehicles - Compressed natural gas (CNG)Fuel system components - Current limiting devices	September, 2021		1	Indigenous
31	IS 15870 : 2009 Reviewed In : 2019	Road vehicles - Use of compressed natural gas (CNG) fuel system in internal combustion engine vehicles - Code of practice	December, 2019	-		Indigenous
32	IS 15956 : 2012 Reviewed In : 2017	Road vehicles - Liquefied petroleum gas (LPG) specific equipments - Definitions, classification and general requirements	September, 2017	-		Indigenous
33	IS 15957 : 2012 Reviewed In : 2017	Road vehicles - Liquefied petroleum gas (LPG) specific equipment - general design requirements, performance and test methods	September, 2017	-		Indigenous
34	IS 16009 : 2013 Reviewed In : 2018	Road vehicles - Liquefied petroleum gas (LPG) specific equipment - Shut off valve	August, 2018	-		Indigenous
35	IS 16053 : 2013 Reviewed In : 2018	Road vehicles - Liquefied petroleum gas (LPG) specific equipment - Pressure regulator and vapourizer	August, 2018	-		Indigenous
36	IS 16062 : 2013 Reviewed In : 2018	Road vehicles - Liquefied petroleum gas (LPG) specific equipment - Pressure and/or temperature sensor	August, 2018	-		Indigenous
37	IS 16063 : 2013 Reviewed In : 2018	Road vehicles - Liquefied petroleum gas (LPG) specific equipment - Lpg filter unit	August, 2018	-		Indigenous
38	IS 16064 : 2013 Reviewed In : 2018	Road vehicles - Liquefied petroleum gas (LPG) specific equipment - Gas mixing piece	August, 2018	-		Indigenous
39	IS 16065 : 2013 Reviewed In : 2018	Road vehicles - Liquefied petroleum gas (LPG) specific equipment - Fuel rail	August, 2018	-		Indigenous
40	IS 16367 : 2017	Road vehicles - Liquefied petroleum gas (LPG) specific equipment - Gas injector		-		Indigenous
41	IS/ISO 17268 : 2020 ISO 17268 : 2020 ISO 17268 : 2020	Gaseous Hydrogen Land Vehicle Refuelling Connection Devices		-		Identical under single numbering
42	IS 19026 (Part 1) : 2023 ISO 12614-1:2021 ISO 12614-1:2021	ROAD VEHICLES Ã¯Â¿Â½ LIQUEFIED NATURAL GAS (LNG) FUEL SYSTEM COMPONENTS - PART 1 : GENERAL REQUIREMENTS AND DEFINITIONS		-		Identical under dual numbering

43	IS 19026 (Part 2) : 2023 ISO 12614-2:2021 ISO 12614-2:2021	ROAD VEHICLES Ã¯Â¿Â½ LIQUEFIED NATURAL GAS (LNG) FUEL SYSTEM COMPONENTS Ã¯Â¿Â½ PART 2: PERFORMANCE AND GENERAL TEST METHODS	-	Identical under dual numbering
44	IS 19026 (Part 3) : 2023 ISO 12614-3:2021 ISO 12614-3:2021	ROAD VEHICLES Ã¯Â¿Â½ LIQUEFIED NATURAL GAS (LNG) FUEL SYSTEM COMPONENTS Ã¯Â¿Â½ PART 3: CHECK VALVE	-	Identical under dual numbering
45	IS 19026 (Part 4) : 2023 ISO 12614-4:2021 ISO 12614-4:2021	ROAD VEHICLES Ã¯Â¿Â½LIQUEFIED NATURAL GAS (LNG) FUEL SYSTEM COMPONENTS Ã¯Â¿Â½PART 4: MANUAL VALVE	-	Identical under dual numbering
46	IS 19026 (Part 5) : 2023 ISO 12614-5:2021 ISO 12614-5:2021	ROAD VEHICLES Ã¯Â¿Â½ LIQUEFIED NATURAL GAS (LNG) FUEL SYSTEM COMPONENTS Ã¯Â¿Â½ PART 5: TANK PRESSURE GAUGE	-	Identical under dual numbering
47	IS 19026 (Part 7) : 2023 ISO 12614-7:2021 ISO 12614-7:2021	ROAD VEHICLES Ã¯Â¿Â½ LIQUEFIED NATURAL GAS (LNG) FUEL SYSTEM COMPONENTS Ã¯Â¿Â½ PART 7 : PRESSURE RELIEF VALVE (PRV)	-	Identical under dual numbering
48	IS 19026 (Part 8) : 2023 ISO 12614-8:2021 ISO 12614-8:2021	ROAD VEHICLES Ã¯Â¿Â½ LIQUEFIED NATURAL GAS (LNG) FUEL SYSTEM COMPONENTS Ã¯Â¿Â½ PART 8: EXCESS FLOW VALVE	-	Identical under dual numbering
49	IS 19026 (Part 9) : 2023 ISO 12614-9:2021 ISO 12614-9:2021	ROAD VEHICLES Ã¯Â¿Â½ LIQUEFIED NATURAL GAS (LNG) FUEL SYSTEM COMPONENTS Ã¯Â¿Â½ PART 9 GAS-TIGHT HOUSING AND VENTILATION HOSE	-	Identical under dual numbering
50	IS 19026 (Part 10) : 2023 ISO 12614-10:2021 ISO 12614-10:2021	ROAD VEHICLES Ã¯Â¿Â½ LIQUEFIED NATURAL GAS (LNG) FUEL SYSTEM COMPONENTS Ã¯Â¿Â½PART 10: RIGID FUEL LINE IN STAINLESS STEEL	-	Identical under dual numbering
51	IS 19026 (Part 11) : 2023 ISO 12614-11:2021 ISO 12614-11:2021	ROAD VEHICLES Ã¯Â¿Â½ LIQUEFIED NATURAL GAS (LNG) FUEL SYSTEM COMPONENTS Ã¯Â¿Â½ PART 11 : FITTINGS	-	Identical under dual numbering
52	IS 19026 (Part 12) : 2023 ISO 12614-12:2021 ISO 12614-12:2021	ROAD VEHICLES Ã¯Â¿Â½ LIQUEFIED NATURAL GAS (LNG) FUEL SYSTEM COMPONENTS Ã¯Â¿Â½ PART 12: RIGID FUEL LINE IN COPPER AND ITS ALLOYS	-	Identical under dual numbering
53	IS 19026 (Part 13) : 2023 ISO 12614-13:2021 ISO 12614-13:2021	ROAD VEHICLES Ã¯Â¿Â½ LIQUEFIED NATURAL GAS (LNG) FUEL SYSTEM COMPONENTS Ã¯Â¿Â½PART 13: TANK PRESSURE CONTROL REGULATOR	-	Identical under dual numbering

54	IS 19026 (Part 14) : 2023 ISO 12614-14:2021 ISO 12614-14:2021	ROAD VEHICLES Ã¯Â¿Â½ LIQUEFIED NATURAL GAS (LNG) FUEL SYSTEM COMPONENTS Ã¯Â¿Â½ PART 14: DIFFERENTIAL PRESSURE FUEL CONTENT GAUGE	-	Identical under dual numbering
55	IS 19026 (Part 15) : 2023 ISO 12614-15:2021 ISO 12614-15:2021	ROAD VEHICLES Ã¯Â¿Â½ LIQUEFIED NATURAL GAS (LNG) FUEL SYSTEM COMPONENTS Ã¯Â¿Â½PART 15: CAPACITANCE FUEL CONTENT GAUGE	-	Identical under dual numbering
56	IS 19026 (Part 16) : 2023 ISO 12614-16:2021 ISO 12614-16:2021	ROAD VEHICLES Ã¯Â¿Â½ LIQUEFIED NATURAL GAS (LNG) FUEL SYSTEM COMPONENTS Ã¯Â¿Â½ PART 16: HEAT EXCHANGER-VAPORIZER	-	Identical under dual numbering
57	IS 19026 (Part 17) : 2023 ISO 12614-17:2021 ISO 12614-17:2021	ROAD VEHICLES Ã¯Â¿Â½ LIQUEFIED NATURAL GAS (LNG) FUEL SYSTEM COMPONENTS Ã¯Â¿Â½ PART 17: NATURAL GAS DETECTOR	-	Identical under dual numbering
58	IS 19026 (Part 18) : 2023 ISO 12614-18:2021 ISO 12614-18:2021	ROAD VEHICLES Ã¯Â¿Â½ LIQUEFIED NATURAL GAS (LNG) FUEL SYSTEM COMPONENTS Ã¯Â¿Â½ PART 18: GAS TEMPERATURE SENSOR	-	Identical under dual numbering
59	IS 19026 (Part 19) : 2023 ISO 12614-19:2021 ISO 12614-19:2021	ROAD VEHICLES Ã¯Â¿Â½ LIQUEFIED NATURAL GAS (LNG) FUEL SYSTEM COMPONENTS Ã¯Â¿Â½ PART 19: AUTOMATIC VALVE	-	Identical under dual numbering
60	IS 19032 : 2023	ROAD VEHICLES-LIQUEFIED PETROLEUM GAS LPG SPECIFIC EQUIPMENT-LPG FLEXIBLE HOSE	-	Indigenous
61	IS 19035 : 2023 ISO 16964: 2019 ISO 16964: 2019	GAS CYLINDERS FLEXIBLE HOSES ASSEMBLIES SPECIFICATION AND TESTING	-	Identical under dual numbering
62	IS 19036 : 2023 ISO 23273: 2013 ISO 23273: 2013	Fuel cell road vehicles Safety specifications Protection against hydrogen hazards for vehicles fuelled with compressed hydrogen	-	Identical under dual numbering
63	IS/ISO 23828 : 2013 ISO 23828 : 2013 ISO 23828 : 2013	FUEL CELL ROAD VEHICLES - ENERGY CONSUMPTION MEASUREMENT - VEHICLES FUELLED WITH COMPRESSED HYDROGEN	-	Identical under dual numbering

Standards Under Develpoment

Projects Approved

SI. No.	Doc No	TITLE

No Records Found

Preliminary Draft Standards

SI. No.	Doc No	TITLE

No Records Found

Drafts Standards in WC Stage

SI. No.	Doc No	TITLE

No Records Found

Draft Standards Completed WC Stage

SI. No.	Doc No	TITLE
1	TED 26 (26637) (21266-1: 2018)	Road vehicles Compressed gaseous hydrogen CGH2 and hydrogennatural gas blends fuel systems Part 1 Safety requirements
2	TED 26 (26638) (21266-2: 2018)	Road vehicles Compressed gaseous hydrogen CGH2 and hydrogennatural gas blends fuel systems Part 2 Test methods

Finalized Draft Indian Standard

SI. No.	Doc No	TITLE

No Records Found

Finalized Draft Indian Standards under Print

SI. No.	Doc No
1	TED 26 (14995)
2	TED 26 (15007)
3	TED 26 (15008)
4	TED 26 (15013)
5	TED 26 (15014)
6	TED 26 (15015)
7	TED 26 (18368)
8	TED 26 (18373)
9	TED 26 (18374)
10	TED 26 (18375)
11	TED 26 (18377)
12	TED 26 (18378)
13	TED 26 (18379)

Total Published Standards:43

Total Standards Under development : 16

Aspect Wise Report

Product:	50
Code of Practices :	1
Methods of Test :	5
Terminology :	3
Dimensions :	1
System Standard :	0
Safety Standard :	2
Others :	1
Service Specification :	0
Process Specification :	0
Unclassified :	0

Total :63

Annexure-I :List of Indian Standards Withdrawn/Superseded

SI. No.	IS No. & Year	TITLE

No Records Found

Annexure-II :List of Indian Product Standards

SI. No.	IS No. & Year	TITLE
1	IS/ISO 12619-3 : 2014 ISO 12619-3: 2014 ISO 18134-2 : 2017	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGEN NATURAL GAS BLEND FUEL SYSTEM COMPONENTS PRESSURE REGULATOR
2	IS/ISO 12619-4 : 2016 ISO 12619-4: 2016 ISO 18134-3 : 2015	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGEN NATURAL GAS BLENDS FUEL SYSTEM COMPONENTS CHECK VALVE

3	IS/ISO 12619-5 : 2016 ISO 12619-5: 2016 ISO 18846 : 2016	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGEN NATURAL GAS BLENDS FUEL SYSTEM COMPONENTS PART 5 MANUAL CYLINDER VALVE
4	IS/ISO 12619-6 : 2017 ISO 12619-6: 2017 ISO 21470 : 2020	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGENNATURAL GAS BLEND FUEL SYSTEM COMPONENTS AUTOMATIC VALVE
5	IS/ISO 12619-7 : 2017 ISO 12619-7: 2017 16075-2 : 2015	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGENNATURAL GAS BLENDS FUEL SYSTEM COMPONENTS GAS INJECTOR
6	IS/ISO 12619-8 : 2017 ISO 12619-8: 2017 ISO 23443 : 2020	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGENNATURAL GAS BLENDS FUEL SYSTEM COMPONENTS PRESSURE INDICATOR
7	IS/ISO 12619-9 : 2017 Adoption of ISO 1261 16075-3 : 2015	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGENNATURAL GAS BLENDS FUEL SYSTEM COMPONENTS PRESSURE RELIEF VALVE PRV
8	IS/ISO 12619-10 : 2017 ISO 12619-10: 2017 ISO 15653:2018	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGEN NATURAL GAS BLENDS FUEL SYSTEM COMPONENTS PRESSURE RELIEF DEVICE PRD
9	IS/ISO 12619-11 : 2017 ISO 12619-11 : 2017 ISO 20158:2018	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGEN NATURAL GAS BLENDS FUEL SYSTEM COMPONENTS EXCESS FLOW VALVE
10	IS/ISO 12619-12 : 2017 ISO 12619-12 : 2017 ISO 20754:2018	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGEN NATURAL GAS BLENDS FUEL SYSTEM COMPONENTS GAS-TIGHT HOUSING AND VENTILATION HOSES
11	IS/ISO 12619-13 : 2017 ISO 12619-13 : 2017 ISO 20932-1:2018	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGEN NATURAL GAS BLENDS FUEL SYSTEM COMPONENTS RIGID FUEL LINE IN STAINLESS STEEL
12	IS/ISO 12619-14 : 2017 ISO 12619-14: 2017	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGEN NATURAL GAS BLENDS FUEL SYSTEM COMPONENTS FLEXIBLE FUEL LINE

	ISO/IEC 29192-7:2019		
13	IS/ISO 12619-15 : 2017 ISO 12619-15: 2017	56002	ROAD VEHICLES COMPRESSED GASEOUS HYDROGEN CGH2 AND HYDROGENNATURAL GAS BLENDS FUEL SYSTEM COMPONENTS FILTER
14	IS 15712 : 2006 Reviewed In : 2021 ISO 15500-6: 2001		Road vehicles - Compressed natural gas CNG fuel system components - Automatic valve Solenoid Valve
15	IS 15713 : 2006 Reviewed In : 2021 ISO 15500-9: 2001		Road vehicles - Compressed natural gas CNG fuel system components - Pressure regulator
16	IS 15714 : 2006 Reviewed In : 2021 ISO 15500-11: 2001		Road vehicles - Compressed natural gas CNG fuel system components - Gas air mixer
17	IS 15715 : 2008 Reviewed In : 2019		ROAD VEHICLES - COMPRESSED NATURAL GAS CNG LIQUEFIED PETROLEUM GAS LPG FUEL SYSTEM COMPONENTS - CONDUIT VENTILATION HOSE
18	IS 15716 : 2006 Reviewed In : 2021		Road vehicles - Compressed natural gas CNG fuel system components - Cng high pressure fuel line Rigid with end connections having pressure exceeding 2 15 mpa 21 5 Bar
19	IS 15717 : 2006 Reviewed In : 2021		ROAD VEHICLES - COMPRESSED NATURAL GAS CNG LIQUEFIED PETROLEUM GAS LPG FUEL SYSTEM COMPONENTS - PETROL VALVE AUTOMATIC MANUAL
20	IS 15718 : 2006 Reviewed In : 2021		Road vehicles - Compressed natural gas CNG fuel system components - Cng high pressure fuel line Flexible Hose with end connections having service pressure exceeding 2 15 mpa 21 5 Bar
21	IS 15719 : 2006 Reviewed In : 2021		Road vehicles - Compressed natural gas CNG fuel system components - Electrical wiring kit
22	IS 15720 : 2008 Reviewed In : 2019		ROAD VEHICLES - COMPRESSED NATURAL GAS CNG AND LIQUEFIED PETROLEUM GAS LPG FUEL SYSTEM COMPONENTS - COMPART
23	IS 15721 : 2006 Reviewed In : 2021		ROAD VEHICLES - COMPRESSED NATURAL GAS CNG AND LIQUEFIED PETROLEUM GAS LPG - FIRE RETARDANT MATERIAL FOR SEAT UPHOLSTERY ROOF AND SIDE LINING

24	IS 15722 : 2006 Reviewed In : 2021	ROAD VEHICLES - COMPRESSED NATURAL GAS CNG FUEL SYSTEM COMPONENTS - CNG LOW-PRESSURE FLEXIBLE FUEL LINE WITH END CONNECTIONS CNG FUEL LINE HAVING PRESSURE NOT EXCEEDING 2 15 MPa 21 5 BAR
25	IS 15723 : 2006 Reviewed In : 2021	Road vehicles - Compressed natural gas CNG Fuel system components - Current limiting devices
26	IS 16009 : 2013 Reviewed In : 2018	Road vehicles - Liquefied petroleum gas LPG specific equipment - Shut off valve
27	IS 16053 : 2013 Reviewed In : 2018	Road vehicles - Liquefied petroleum gas LPG specific equipment - Pressure regulator and vapourizer
28	IS 16062 : 2013 Reviewed In : 2018	Road vehicles - Liquefied petroleum gas LPG specific equipment - Pressure and or temperature sensor
29	IS 16063 : 2013 Reviewed In : 2018	Road vehicles - Liquefied petroleum gas LPG specific equipment - Lpg filter unit
30	IS 16064 : 2013 Reviewed In : 2018	Road vehicles - Liquefied petroleum gas LPG specific equipment - Gas mixing piece
31	IS 16065 : 2013 Reviewed In : 2018	Road vehicles - Liquefied petroleum gas LPG specific equipment - Fuel rail
32	IS 16367 : 2017	Road vehicles - Liquefied petroleum gas LPG specific equipment - Gas injector
33	IS 19026 (Part 3) : 2023 ISO 12614-3:2021	ROAD VEHICLES LIQUEFIED NATURAL GAS LNG FUEL SYSTEM COMPONENTS PART 3 CHECK VALVE
34	IS 19026 (Part 4) : 2023 ISO 12614-4:2021	ROAD VEHICLES LIQUEFIED NATURAL GAS LNG FUEL SYSTEM COMPONENTS PART 4 MANUAL VALVE
35	IS 19026 (Part 5) : 2023 ISO 12614-5:2021	ROAD VEHICLES LIQUEFIED NATURAL GAS LNG FUEL SYSTEM COMPONENTS PART 5 TANK PRESSURE GAUGE
36	IS 19026 (Part 7) : 2023 ISO 12614-7:2021	ROAD VEHICLES LIQUEFIED NATURAL GAS LNG FUEL SYSTEM COMPONENTS PART 7 PRESSURE RELIEF VALVE PRV
37	IS 19026 (Part 8) : 2023 ISO 12614-8:2021	ROAD VEHICLES LIQUEFIED NATURAL GAS LNG FUEL SYSTEM COMPONENTS PART 8 EXCESS FLOW VALVE
38	IS 19026 (Part 9) : 2023 ISO 12614-9:2021	ROAD VEHICLES LIQUEFIED NATURAL GAS LNG FUEL SYSTEM COMPONENTS PART 9 GAS-TIGHT HOUSING AND VENTILATION HOSE

39	IS 19026 (Part 10) : 2023 ISO 12614-10:2021	ROAD VEHICLES LIQUEFIED NATURAL GAS LNG FUEL SYSTEM COMPONENTS PART 10 RIGID FUEL LINE IN STAINLESS STEEL
40	IS 19026 (Part 11) : 2023 ISO 12614-11:2021	ROAD VEHICLES LIQUEFIED NATURAL GAS LNG FUEL SYSTEM COMPONENTS PART 11 FITTINGS
41	IS 19026 (Part 12) : 2023 ISO 12614-12:2021	ROAD VEHICLES LIQUEFIED NATURAL GAS LNG FUEL SYSTEM COMPONENTS PART 12 RIGID FUEL LINE IN COPPER AND ITS ALLOYS
42	IS 19026 (Part 13) : 2023 ISO 12614-13:2021	ROAD VEHICLES LIQUEFIED NATURAL GAS LNG FUEL SYSTEM COMPONENTS PART 13 TANK PRESSURE CONTROL REGULATOR
43	IS 19026 (Part 14) : 2023 ISO 12614-14:2021	ROAD VEHICLES LIQUEFIED NATURAL GAS LNG FUEL SYSTEM COMPONENTS PART 14 DIFFERENTIAL PRESSURE FUEL CONTENT GAUGE
44	IS 19026 (Part 15) : 2023 ISO 12614-15:2021	ROAD VEHICLES LIQUEFIED NATURAL GAS LNG FUEL SYSTEM COMPONENTS PART 15 CAPACITANCE FUEL CONTENT GAUGE
45	IS 19026 (Part 16) : 2023 ISO 12614-16:2021	ROAD VEHICLES LIQUEFIED NATURAL GAS LNG FUEL SYSTEM COMPONENTS PART 16 HEAT EXCHANGER-VAPORIZER
46	IS 19026 (Part 17) : 2023 ISO 12614-17:2021	ROAD VEHICLES LIQUEFIED NATURAL GAS LNG FUEL SYSTEM COMPONENTS PART 17 NATURAL GAS DETECTOR
47	IS 19026 (Part 18) : 2023 ISO 12614-18:2021	ROAD VEHICLES LIQUEFIED NATURAL GAS LNG FUEL SYSTEM COMPONENTS PART 18 GAS TEMPERATURE SENSOR
48	IS 19026 (Part 19) : 2023 ISO 12614-19:2021	ROAD VEHICLES LIQUEFIED NATURAL GAS LNG FUEL SYSTEM COMPONENTS PART 19 AUTOMATIC VALVE
49	IS 19035 : 2023 ISO 16964: 2019	GAS CYLINDERS FLEXIBLE HOSES ASSEMBLIES SPECIFICATION AND TESTING
50	IS 19036 : 2023 ISO 23273: 2013	Fuel cell road vehicles Safety specifications Protection against hydrogen hazards for vehicles fuelled with compressed hydrogen