

BUREAU OF INDIAN STANDARDS

AGENDA

Name of the Committee	No. of Meeting	Day	Date	Time	Venue
Railway Electric Traction Equipments and Systems Sectional Committee, ETD 47	5 th	Thursday	16/05/2024	11:00 hrs	Online mode Joining link: https://bismanak.webex.com/bismanak/j.php?MTID=m7fecbc2ea086df1658ad66ba2fdb4d72

CHAIRMAN: Shri Jagdish Kumar

MEMBER SECRETARY: Shri Emanuel Abhishek Murmu

Item 0 WELCOME & OPENING REMARKS BY THE CHAIRPERSON

Item 1 CONFIRMATION OF THE MINUTES OF THE LAST MEETING

1.1 The minutes of the last meeting (4th meeting) of Railway Electric Traction Equipments and Systems Sectional Committee, ETD 47 held on 07 February 2024 through video conferencing were circulated vide email dated 15 April 2024. In view of no technical comments received, the committee may formally approve the Minutes of last meeting.

The committee may consider.

Item 2 COMPOSITION OF SECTIONAL COMMITTEE, ETD 47

2.1 The present composition and the status of participation of committee members in the previous three meetings of Railway Electric Traction Equipments and Systems Sectional Committee, ETD 47, is given at **Annex 1**.

The committee may consider.

2.2 Request for co-option is received from following organisations:

Sl. No.	Organization	Name
1.	TisCon Testing & Research Institute, Pimpri-Chinchwad	Chandrashekhar A. Mane
2.	VERTO Engineering Corporation, Pune	Vijay Tukaram Wankhede
3.	JACOBS Engineering, Mumbai	Vijay Kumar

The details of above nominations are placed at **Annex 2**.

The committee may consider.

2.3 Status of participation of members in the previous three meetings inviting suggestions for improvement

Standardization is a collaborative effort, and its success largely depends on the participation and contribution of the members of the concerned technical committees. Further, for standards to be relevant it is also important that viewpoints of all interested stakeholders are brought on board and duly considered while building consensus on the standard being developed. Hence, participation in the technical committee meetings is extremely important in order to ensure that the views of all stakeholder interests are given due consideration by the committee in the formulation of Indian Standards.

The committee members are requested to provide suggestions for improvement.

Item 3 ACTIONS ARISING OUT OF PREVIOUS MEETING

Sr. No.	Item no. of last minutes	Subject	Decision taken during the last meeting	Action/ Remarks
1	2.1	Composition of the Committee	The committee decided to seek nomination from all Metro for co-option in the sectional committee. Contact details will be provided by DMRC.	Details awaited from DMRC
2	3.1	Composition of the Committee	It was decided to write to the following organizations for nominations: BEML Ltd Bombardier Alstom Crompton Greaves	Reminders sent on 30.04.2024
3	3.2	Co-option Requests	With regard to cooption requests received from Vijay Tukaram Wankhede, Vijay Kumar, Chandrashekhhar Mane, it has been decided that decision shall be taken in next meeting after scrutinizing the biodata of them. The same shall be shared with all members along with the minutes. Biodata's shared vide email dated August 3, 2021. It was decided to reconsider the co-option requests in next meeting.	The committee may consider

4	3.3	Composition of the Railway Electric Traction Equipments and Systems Sectional Committee, ETD 47	<p>1. It was observed that members from RDSO have to be updated. Dr Sujeet Mishra conveyed that he will provide contacts of RDSO.</p> <p>2. It was decided to seek fresh nominations from M/s Skipper Seil Limited, Gurugram.</p> <p>3. Shri Ravi Agarwal suggested co-option of MRVC.</p> <p>The committee decided to write to these organizations for fresh nominations.</p>	The committee may consider
5	3.4	International Activities	<p>In order to take forward the adoption of relevant IEC standards, it was decided to finalize the composition of panels as follows:</p> <p>Panel 1: Rolling Stock (P-1) RDSO, DMRC, CPRI, ABB, Medha Servo drives Private Limited, BEML (to be co-opted) and Bombardier (to be co-opted).</p> <p>Panel 2: Fixed Installations (P-2) CPRI, DFCCIL, ERDA, DMRC, Siemens, ABB and RDSO shall be sub-committees of this sub-committee.</p> <p>Panel 3: Overhead Equipment (P-3) composition to be finalized. RDSO, DMRC</p> <p>Panel 3: Power Supply Installations (P-4) composition to be finalized RDSO</p> <p>The committee decided as follows:</p> <p>a) DMRC is made convener of Panel 1.</p> <p>b) Panel 3 will be merged with Panel 2 (Fixed Installation)</p>	-

6	4.1	International Activities	<p>1. The committee decided to circulate all the IEC standards to committee members.</p> <p>2. The committee decided to circulate the list of standards published (containing standard number & title) by CEN and CENELEC, related to railways among members as suggested by Dr Sujeet Mishra.</p>	<p>The IEC standards and list of CEN, CENELEC standards related to railways were circulated to members vide email dated 23.04.2024. The members are requested to assess the suitability and feasibility of identical adoption of these standards in India.</p>
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The committee may consider.

Item 4 PROCESS REFORMS IN BIS

4.1 Process Reforms in Formulation of Standards

BIS has instituted several process reforms in respect of formulation of Indian Standards. It is essential that the members of Technical Committees are fully aware of these reform measures. The Agenda of the first meeting held during this financial year should be devoted to discussing these process reforms and developing a clear understanding of the roadmap for future. The Agenda of these meetings should inter-alia include the following

- i) Annual Action Plan for the year 2024-25
- ii) Annual Calendar of Technical Committee meetings
- iii) Research Projects to be taken up for inclusion of empirical data and insights
- iv) Closer examination of the New Work Item proposals received from IEC
- v) The measures to ensure effective participation by Indian experts in IEC
- vi) National and International events to be participated
- vii) Scientific journals and periodicals to be subscribed
- viii) Creation of pool of experts
- ix) Recognition of Standards of Recognised SDOs (Standards Developing Organisations) as Indian Standards.

4.1.1 Annual Action Plan for the year 2024-25

Annual Action Plan is an important instrument as it helps to plan for the entire year the activities to be undertaken by the committee inter-alia includes documents under development, meetings, new subjects to be taken up, etc. However, the action plan should also have agility to accommodate new requirements arising at any point of time. BIS management therefore emphasizes on preparation of the Rolling Annual Action Plan and advises committees to prepare the one for the year 2024-2025.

Considering the above, the committee may **CONSIDER** the draft Annual Action Plan for the year 2024-25 given at **Annex 3**.

4.1.2 Annual Calendar of Technical Committee Meetings

The item on date and place for the next meeting of the committee may be replaced with the title “Annual Calendar of Technical Committee meetings”.

4.1.3 Research Projects to be taken up for inclusion of empirical data and insights.

Quality of a standard depends largely on the research data being considered while developing standards. Further, such data also provides insight on the modification required or incorporation of a specific requirement/ parameter in a standard. It is presumed that during the development of a standard the members/ proposer will provide data in support of the proposal/ requirements. In some cases, it is seen that due to lack of such information, the standard does not meet the requirements of the market. BIS management has therefore offered support to committee for taking up research projects to collect empirical data and getting insight for the development of standard.

Guidelines for Research and Development Projects for Formulation and Review of Standards is placed at **Annex 4**.

Following are some of the salient features of these guidelines:

The sectional committee may consider the following points as a research and development project may include one or mix of the following:

- a) Secondary research based on internet or published information including authentic data sources;
- b) Survey based research (including industry visits) to ascertain prevailing market conditions and practices, standards in use, industry and consumer preferences, availability of infrastructure, technical capabilities, comparative trends, economic trends;
- c) Ascertaining compliance to existing and proposed standards through testing, review of past test reports, other validation and verification checks; and
- d) Basic and innovative research to establish normative criteria. Criteria may include performance, health, safety, environmental impact.

The committee may **CONSIDER** and **IDENTIFY** standards for which research project needs to be taken up.

4.1.4 Closer examination of the new work item proposals received from IEC

Participation in the development of international standards from an early stage helps to influence the standard as well as to understand why a specific requirement is being considered. It is therefore important that the New Work Item proposal received from IEC are examined closely and a national viewpoint is prepared on the subject as early as possible.

4.1.5 Measures to ensure effective participation by the Indian experts at IEC level.

The committee is considering various aspects to increase participation in the IEC committees, be it obtaining P-membership, nominating experts in WGs of national interest, voting on the ballots, participation in the meetings, etc. It is however important to measure effectiveness of our participation in international standardization work.

The Committee may **CONSIDER** the measures to ensure effective participation by the Indian experts at IEC level.

4.1.6 National and International events to be participated.

Apart from participation in IEC meetings, the participation of BIS in other national or international importance events on the committee subject can facilitate in staying updated with the new and emerging trends in the field of work, networking and collaboration with relevant experts and stakeholders, influencing policy and decision making, promoting standardization efforts, etc.

The committee may **IDENTIFY** other national and international events wherein BIS should participate for the benefit of standard's work.

4.1.7 Scientific journals and periodicals to be subscribed.

BIS has been subscribing scientific journals and periodicals to support standards work and maintaining these through our central library.

The committee may suggest scientific journals and periodicals which may be useful in standard development especially in the field of Railway Electric Traction Equipments and Systems.

4.1.8 Creation of pool of experts

To have the committee manageable and workable, BIS management has suggested optimum size of a committee as 25-30 members. Further, representations of various interest groups in the committee have also to be ensured. Considering the facts, some time it felt by the committees that it lacks requisite expertise for developing some specific subject standards. It is therefore essential that a pool of experts has to be created through establishment of sub-committees or panels or WC mailing lists or other modes.

The Committee may **SUGGEST** ways to create and maintain a pool of experts in the field of Railway Electric Traction Equipments and Systems.

4.1.9 Recognition of Standards of Recognised SDOs (Standards Developing Organisations) as Indian Standards

Under the vision of “**One Nation One Standard**”, BIS is engaged in the establishment, review and promotion of the Indian Standards, in relation to goods, articles, processes, systems and services. Further, there are other premier Standards Developing Organizations (SDOs) in the country who have been formulating sector-specific standards and their standards are widely

implemented in their concerned sectors. This document describes the criteria for recognition (including terms and conditions), procedure for recognition and operation of Standards Developing Organizations (SDOs) in India, whether governmental or non-governmental, by the Bureau of Indian Standards.

Bureau Of Indian Standards' Scheme for Recognition of Standards Developing Organizations (SDOs) is attached at **Annex 5**.

The committee may kindly note.

4.2 Latest structural and process reforms

a) Smart and efficient SCs

- On boarding program for every newly inducted member
- Signed declaration by each SC member
- Lapse in membership if member remains absent from two consecutive meetings of the SC
- Mandatorily commenting on P-draft through portal only (support or reject it or offer comments for improvement)

c) R&D projects

d) Working with IEC

- Identification of Indian Standards to be proposed as NWIPs at IEC

e) Advanced dashboard for standardization and efficiency index

- Advanced Dashboard- Analytical reports on various aspects of the functioning of TCs and the progress of standards under development
- Efficiency Index- Ranks the SCs on the basis of their performance against the given parameters. Details are given in **Annex 6**.

The Committee may consider.

Item 5 INTERNATIONAL ACTIVITIES

5.1 India is a Participating member ('P' member) in IEC/TC 9.

It may be noted that P-Members (Participating members) have the obligation to vote at all stages and to participate and contribute in the TC meetings.

The next meeting of IEC/TC 9 meeting is planned with 64th IEC Plenary Meeting in Napoli (Italy) from 08-10-2024 to 11-10-2024.

Present position of work of IEC TC 9 is given at **Annex 7** and **8**.

The committee may note.

5.2 The details of voting/comments sent on IEC documents since last meeting are as follows:

Sr. No.	Document No.	Last date	Vote
1	9/3038/Q	2024-01-19	Yes vote sent
2	9/3041/FDIS	2024-01-26	In Favour
3	9/3030/DC	2024-02-02	No Comment
4	9/3032/NP	2024-02-09	In Favour
5	9/3035/CD	2024-02-16	No Comment
6	9/3019/CDV	2024-02-23	In Favour
7	9/3047/Q	2024-03-01	No comment
8	9/3026/CDV	2024-03-15	In Favour
9	9/3053/DC	2024-03-15	No comment
10	9/3056/Q	2024-03-22	Yes vote sent
11	9/3046/CD	2024-04-05	No comment
12	9/3069/Q	2024-04-12	Nomination support
13	9/3039/CDV	2024-04-19	In Favour
14	9/3040/CDV	2024-04-19	In Favour
15	9/3051/CD	2024-04-19	In favour comment sent

Members are requested to go through the IEC documents being circulated for comments and to provide their comments considering Indian ambient conditions so that the published standards may be adopted as Indian Standards.

The committee may note.

5.3 Status of standardization in the areas dealt by the committee at international level and suggestions for improving participation in the related committees of ISO/IEC

Participation in the international meetings would help India to project its views/proposals at the international level. It would help in harmonizing Indian Standards with the International Standards which in turn would facilitate acceptance of Indian products in the International Market.

Item 6 Annual Calendar of Technical Committee Meetings

Sectional Committee	Q1	Q2	Q3	Q4
ETD 47	16/05/2024	07/08/2024	12/11/2024	05/02/2025

Item 7 ANY OTHER BUSINESS

ANNEX 1

SI. No.	Organization	Member Name	Member Email	Role	Last 3 attendance			
					2 nd	3 rd	4 th	Total
1	Delhi Metro Rail Corporation Limited, Delhi	Shri Jagdish Kumar	jagdish.2390@dmrc.org	Chairman	—	—	P	1/1
2	ABB India Limited, Bengaluru	Shri Himanshu Tangri	himanshu.tangri@in.abb.com	PM	P	A	A	1/3
		Shri Ramu. S	Ramu.s@in.abb.com	AM				
3	Autometers Alliance Limited, Noida	Shri Vikas Kumar	vikas.kumar@autometers.com	PM	—	—	A	0/1
4	Bharat Heavy Electrical Limited, New Delhi	Shri Sushil Kumar	sushil.kumar@bhel.in	PM	P	P	A	2/3
		Shri Arun Kumar Yadav	ak-yadav@bhel.in	AM				
5	Central Electricity Authority, New Delhi	Shri Ashok Kumar Rajput	rajput.ashok@gmail.com, akrajput@nic.in	PM	A	A	A	0/3
6	Central Power Research Institute, Bengaluru	Shri S. Sudhakar Reddy	ssreddy@cpri.in	AM	P	P	A	2/3
		Shri Yugal Agarwal	yugal@cpri.in	PM				
7	Dedicated Freight Corridor Corporation India Limited, New Delhi	Shri Arvind Kumar Maurya	akmaurya@dfcc.co.in	PM	—	P	A	1/2
		Shri Chandrakant Moongray	Chandrakantm@dfcc.co.in	AM				
8	Delhi Metro Rail Corporation Limited, Delhi	Shri Anand Kumar	anand7495@gmail.com, anand.kumar@dmrc.org	AM	P	P	P	3/3
9	Electrical Research and Development Association, Vadodara	Shri Ravi Singh	ravi.singh@erda.org	AM	A	A	P	1/3
		Shri Puran Gajera	puran.gajera@erda.org	PM				
10	Indian Electrical and Electronics Manufacturers Association, New Delhi	Shri Vivek Arora	vivek.arora@ieema.org	AM	P	A	P	2/3
		Shri Uttam Kumar	uttam.kumar@ieema.org	PM				
11	Indian Railways Institute of Transport Management, Lucknow	Dr. Sujeet Mishra	mishra.sujeet@gov.in	PM	—	—	P	1/1
12	Medha Servo Drives Private Limited, Hyderabad	Shri K.V. Koteshwara Rao	koteshwararaok@medha.com	PM	P	A	P	2/3
13	Mitsubishi Electric Corporation, New Delhi	Shri Pradeep Venugopal	Pradeep.Venugopal@asia.mea p.com	PM	—	—	A	0/1
14	Mumbai Metro Rail Corporation Limited, Mumbai	Shri Rajeev	rajeev@mmrc.com	PM	—	—	A	0/1
		Shri Rajeev Kumar	rajeev.kumar@mmrc.com	AM				
15	Mumbai Railway Vikas Corporation Limited, Mumbai	Shri Ravi Agarwal	cmd@mrvc.gov.in	PM	—	P	A	1/2
		Shri Vinod Kumar Mehra	gmelectrical@mrvc.gov.in	AM				
16	National High Speed Rail Corporation Limited (NHSRCL), New Delhi	Shri Vinay Gupta	agmelec@nhsrcl.in	PM	—	P	A	1/2
		Shri Amit Kumar Tripathi	dgmeleclldi@nhsrcl.in	PM				
17	Siemens Limited, Mumbai	Shri Anupam Arora	anupam.arora@siemens.com	PM	P	A	A	1/3
		Shri V. Natarajan	v.natarajan@siemens.com	AM				
18	Skipper Seil Limited, Gurugram	Shri K.B Kadal	kbkadal@skipporseil.com	PM	A	A	A	0/3
		Shri Akash Verma	akash.verma@skipporseil.com	AM				

Note:

PM: Principal member

AM: Alternate member

CURRICULUM VITAE

Name: Chandrashekhar A. Mane

Flat No.G-26, Devi Indrayani Society,
Near Dehu-Talwade IT City,
Pune. 411062.

Mail to: c.mane2020@gmail.com

Mobile No: +91 8600294927

Experience Summary:

Overall 6.8 years of Experience in Design, Product Development & Testing as well as Project Co-ordination.

Experience:

Organization	Designation	Duration
TisCon Testing & Research Institute	Founder	Nov 18 to till date
Electrical Research & Development Association	Engineer – HTLS (M12)	Jul 17 to Nov 18
Ramelex Pvt. Ltd.	Technical Manager - Mech	Jun 13 to Jul 17
Limson Engg. Pvt. Ltd.	Trainee Engineer	Jun 12 to Jun 13

Electrical Research & Development Association

Job Profile:

- Project Co-Ordinator for HTLS with commercial & civil team.
- Working as HTLS –Specialist for the Project development.
- Plan, review & reporting the project related activities to committee.
- Worked as Acting Head of Section for the overall functioning of the section.
- Plan activity within the project to reach the desired target with good quality.
- Planning for the overall staff of the laboratory for achieving the target of section.
- Vibration testing of the various products.
- Preparation & Checking of the test reports.
- Preparation & implementation of the procedures as per ISO/IEC 17025.

Ramelex Pvt. Ltd.

Job Profile:

- Plan own activity within the project to reach the desired target with good quality.
- Preparation & implementation of the procedures as per ISO/IEC 17025.
- Training to technical Staff.
- Implementation of Corrective and preventive actions.
- Help in laboratory improvement programmers.
- Maintenance of laboratory equipments.
- Periodic calibration of laboratory equipments.
- Codification and allotment of samples to respective Testing Engineer for testing.
- Preparation of test reports and entry of test results in test report register.

- Safety of personnel
- Approval of test reports.
- Review of test methods for its adequacy and update the methods.
- Create all types of drawings (component, assembly, sub-assembly, etc.) with BOM for the range of products.
- Make all design calculations and ensure proper selection of Mechanical & Electrical parts / components as per the customer requirement
- Check parts and assembly drawings
- Support Marketing department in technical proposal (for new requirements) preparation
- Make calculations for selection of bought out items
- Support Manufacturing team on technical issues
- Plan, Prioritize, Execute Design Detailing (Modeling, Part Drawings, Assembly Drawing, BOM release, Specification Sheet release, Documentation).
- Prepare drawing in 2D/3D and keep the record.
- Catalogue preparation for above products and updating of its.
- Involvement in Product development activity.
- Each and every drawing will be checked and authorized by concern authorities.
- Maintain drawing revision control.
- Controlled drawing copy issued to Production /Quality /Purchase/ marketing dept. separately.
- Preparation of technical specifications for tender purpose.
- Design drawing as per customer requirement either company standard design procedure.
- Prepare SOP for own dept, and get it approved from authorities.
- Keep all document and record properly.
- To plan own activity within the project to reach desired targets, with good quality.
- Send weekly Work hour report to Technical director.
- Participation in the Technical Meeting with Customer as well as Supplier.
- Vendor Development.
- Follow up with Manufacturing Division and Vendor for completing the order.
- Approval of the product from third party Govt. Laboratory.
- Follow company policy / rules and maintain healthy environment.

Limson Engineering Pvt. Ltd.

Responsibilities:

- Drafting of the Product.
- CNC Programming for the Profile Cutting machine.
- Assistant to Sales Team for Weight Calculations and Quotation.
- Material Management for Profile Cutting.
- Solving the Quality issue with Discussion with Customer representative.
- Follow up with Vendors.
- Preparation of Quality Documents, Other Related Document.
- Follow company policy / rules and maintain healthy environment.

Projects Handled:-

Company Name:-Ramelex Pvt. Ltd.

Client Name: JSW Steel Ltd.

Project Name: - Replacement of existing 0.4 Zebra conductor by equivalent HTLS Conductor for Wadkhal – Nagthone D/C Line.

Description:

Our Client's current Load capacity is increased due to that replacement of existing 0.4 Zebra Conductor by equivalent HTLS Conductor. The Main concern in this scenario is to Design of Conductor Accessories and power connectors.

CAD Tool: Auto-CAD 2008.

Team Size: 04

Role: Design Engineer cum Technical Analyst.

Project Work:

- To study project file & planning prior to the delivery committed to the customer.
- Find requirement of Conductor Accessories and Power Connectors.
- Design of the Conductor Accessories and Power Connectors.
- Selection of the Material for Conductor Accessories and Power Connectors.
- Calculation of weight, Sustainability with the Temperature requirement.
- Getting the Approval from MSETCL.
- Getting preparation of samples for Testing with the Help of Manufacturing Division.
- Testing the above samples as per relevant Standards in Testing Lab.
- After successful testing call to MSETCL Authority to witness the test.
- Getting approval from third party Govt. Laboratory.

Client Name: Viraj Profile Ltd Mumbai

Project Name: - Replacement of 0.2 Panther conductor by HTLS Conductor.

Description:

Our Client's Load capacity is increased due to that replacement of existing 0.2 Panther Conductor by HTLS Conductor. The Main concern in this scenario is to Design of Conductor Accessories and Hardware.

CAD Tool: Auto-CAD 2008.

Team Size: 04

Role: Design Engineer cum Technical Analyst.

Project Work:

- To study project file & planning prior to the delivery committed to the customer.
- Find requirement of Conductor Accessories and Power Connectors.
- Design of the Conductor Accessories and Power Connectors.
- Selection of the Material for Conductor Accessories and Power Connectors.
- Calculation of weight, Sustainability with the Temperature requirement.

- Getting the Approval from MSETCL.
- Getting preparation of samples for Testing with the Help of Manufacturing Division.
- Testing the above samples as per relevant Standards in Testing Lab.
- After successful testing call to MSETCL Authority to witness the test.
- Getting approval from third party Govt. Laboratory.

Career Objective:

Providing the best solutions in engineering industries that needs innovation, Creativity and Dedication to enable me continue to work in a challenging and fast paced environment, leveraging my current knowledge and fostering creativity with many learning opportunities.

Educational Qualification:

B.E. MECH - 67.07%
BMIT SOLAPUR

Passport Detail:

Passport No. :- Z3103647
Passport issuing Regional Office - Pune

Industrial Training:

- Name of the Company: JK Talabot Limited (A Subsidiary of Raymond Limited.), Chiplun.
- Period : 15 December, 2010 to 30 December, 2010.
- Nature of Training : During this training I have undergone orientation in various Departments and Manufacturing Processes.

Degree Project:

Title: - “Analysis of Heat Pipe”

Description: - Aim is to manufacturing and Analysis of Mild Steel heat pipe to reduce complications of fins by using single heat pipe keeping same heat transfer Rate.

Software Proficiency:

CATIA V5, Unigraphics NX 9.0, AutoCAD 2009, C+, C++ (Basic)

Testing Proficiency:

MPT Level-II, Tensile testing, Hardness testing, Chemical composition testing, PMI Testing.

Achievements:

- Elected as **General Secretary** of student council (2005-06).
- Secured **3rd Prize** in **Debate Competition** held at Departmental Level (2009-10).

Co-Curricular Activities:

- Participation in A National Level Robo-Tryst 2012 at BMIT , Solapur (2012)
- Participation in A National Level Paper Presentation on the “Development of Thermal Battery” at College of Engineering, Ambajogai (2010).
- Worked as **Editorial Committee Member** for College Magazine (2010).

Extra-curricular Activities:

- Worked as **Head for Financial committee** of Mechanical Engineering Student Association (MESA) (2010-11)
- Successfully completed Maharashtra Cadet Core (2004-05).

Educational Details:

Degree	Name of Institution	University/ Board	Class	Year	Aggregate Percentage
B.E.- Mechanical	Brahmdevdada Mane Institute of Technology, Solapur	Solapur University, Solapur	B.E.	2011-12	67.07
			T.E.	2010-11	61.44
			S.E.	2009-10	60.87
			F.E.	2008-09	61.71
H.S.C.	Shivaji Mahavidyalaya, Udgir	State Board	-	2007-08	65.83
S.S.C.	Shree Sant Namdev Vidyalaya, Dhamangaon	State Board	-	2005-06	77.20

Personal Profile:

Father's Name : Annarao G. Mane
Mother's Name : Laxmibai A. Mane
Date of Birth : 7th May, 1990.
Sex / Marital Status : Male / Single
Nationality : Indian
Hobbies : Watching Science Channels, Traveling, Reading Books, Swimming.
Languages known : Marathi, Hindi, English, German (Basic).

Declaration:

I hereby declare that the above mentioned information is correct to my knowledge and I bear the responsibility for the correctness of the above mentioned particulars.

Place:

Date:

Chandrashekhar A. Mane

Vijay Tukaram Wankhede

Seeking a challenging position in the organization where I can prove my skills & abilities to the best in order to contribute to achieve the goals of the industry /organization I work for.

INFO.

Permanent & Present Address:-

Flat no G501,
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SOCIAL

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b257445a

CORE COMPETANCIES

- TEAM BUILDING
- P&L MANAGEMENT
- BUSINESS PLANNING ON REGIONAL & NATIONAL LEVEL
- BUSINESS STRATEGY
- SBU MANAGEMENT
- TESTING AT MANUFACTURERS WORK AND SITE AS AN

PROFESSIONAL EXPERIENCE

From Feb 2020 till date

Organization : VERTO Engineering Corporation, Pune
& Adhril Consultancy Services

Designation : CEO / Proprietor

Current CTC : > INR 3.5 Mn PA (INR Thirty Five Lakh PA)

JOB PROFILE:

- I have started this firm last year and started the operations as below, we have total THREE VERTICALS
 - **Third Party Inspection Agency for all type of transformers including Distribution Transformers**
 - Design center for various type of Distribution, Power & Special type of Transformers.
 - Trading and exporter of Electrical goods on other countries, we have our own IEC certificate
 - **We have fully fledged testing facility at site**
 - **Magnetic Balance Test (MBT)**
 - **Ratio Test**
 - **Insulation Resistance Test (IR)**
 - **Resistance test**
 - **Vector Group Test**
 - **Visual & Dimensional tests as per the GA draw From May 2003 to October 2004**

Organization : ADOR WELDING LTD (Earlier known as

From Aug 2008 till April 2014

Organization : Raychem RPG Pvt Ltd., Pune

Designation : Central Marketing Head

JOB PROFILE:

- Raychem RPG – Transformer divisions started in 2007, strategically orders started from Industry Segment all over India. The type of Transformer are Distribution, Power, Furnace, Converter and special application Transformers oil filled as well as dry type, Compact substation etc.
- Keep the Margins In tact by giving the best & final prices to the sales team.
- Major Contribution in increasing the sales from USD 2 Mn to USD 15 Mn
- Marketing & branding of Transformers all over India by taking conferences, Road Show for various consultants, contractors, Dealers &

PERSONAL DETAILS

DATE OF BIRTH

19th March, 1978

GENDER

Male

MARITAL STATUS

Married

NATIONALITY

Indian

EDUCATION

PGD :2011-2012

IIM Lucknow – Management Development Programme.

DEGREE :

Government College of Engineering Pune (COEP)-
Electrical Engineering

HSC:

Maharashtra State Board
(Nashik)-Passed in June 95
with Distinction (84.5 %)

SSC :

Maharashtra State Board
(Nashik)-Passed in June 93
with first class (72.14 %)

- Have Headed the International Business Division for more than six months.
- Business development in African continents.
- Participation in ELECRAMA & other such Events in India & Abroad

From Sept. 2006 till Aug 2008

Organization : Universal Power Transformer Pvt Ltd., Pune

Designation : Regional Manager

JOB PROFILE:

- Marketing of various type of industrial electrical products like Distribution, Power, Furnace, Converter and special application Transformers oil filled as well as dry type, Medium Voltage Switchgear, Compact substation etc
- Major Contribution in increasing the sales from INR 15 Mn to INR 150 Mn in less than two years.
- Heading the region and fully responsible for meeting the Sales, Order booking & collection targets set by the top management.
- Headed the International Business Division for more than six months , Visited Qatar (Doha), Bahrain & Oman (Muscat) for the business developments.

From November 2004 to September 2006

Organization : EMCO Limited, Jalgaon.

Designation : Deputy Manager – Design & Development

JOB PROFILE :

- To make the Electrical design of all special types of transformer. Attend the Technical Discussions with the Customer, Sometimes to take Drawing Approval from customers. Checking of design on RUSSIAN SOFTWARE "REST" FOR SHORT-CIRCUIT strength of the transformer.
- Checking the Electrical design, solve the problems on the shop floor, and give the training to engineers as well as workers.
- Checking of the Costing sheet and decide the price.
- Designed oil filled transformer
 - up to and including 20MVA voltage class 66KV
 - Various types of designs like Converter Duty, Inverter Duty, Submerged Arc / Arc / Ladle Arc Furnace transformers from the range of 2.5MVA to 12.5MVA up to & including 33KV voltage Class.
- Standardization of designs

From May2003 to October 2004

Organization : ADOR WELDING LTD (Earlier known as AdvaniOerlikon Ltd.)

Designation :Assistant Manager- R & D

JOB PROFILE :

- Research and development for new welding machines. For the same, make the Prototype, test it, check all parameters, And welding performance, make it more user Friendly.
- Developed RED-401 and RED-501 AC Arc welding Machines commercially successfully.
- Development of MAXIMIG-300 MIG Welding Machine.
- Developed MAXIMIG-251 AUTO CD MIG Welding Machine commercially successfully

From Feb.2000 TO April 2003.

Organization : Kirloskar Power Equipments Ltd, Pune

Designation :Sr. Engineer- Electrical Design

JOB PROFILE:

- Designed oil filled transformer up to and including 10MVA, 33KV class., Designed 3.5MVA, 11/0.1-0.1 Kv converter duty transformer
Designed 5MVA 11/3.3KV with off-Ckt. tap links dry type cast resin transformer.
- Also having exposure of Dry type cast resin transformer (CRT), As the Kirloskar Power Equipments Ltd. is the leading CRT manufacturer in India.
- Checking of Mechanical Drawings (G.A. + R&D plate+ Fabrication + Yoke clamp drg. Etc.). Sometimes made Customer Drawings (G.A. and R&D plate drg).

PASSPORT DETAILS :
REPUBLIC OF INDIA
Z3565662
Valid : 15/11/2026

VIJAY KUMAR
ELECTRICAL DESIGN ENGINEER

Email: vijayakumar.yellanki@gmail.com

Mobile: +91 9491843552.

Ln: <https://www.linkedin.com/in/vijay-kumar-vijji/>

Yellanki VariPalli, Kalakada (Mo.),
Chittoor (Di.), Andhra Pradesh, INDIA.

Pin Code -517235.

PROFILE OBJECTIVE: -

Having 4.0+ years of good exposure in Electrical design and simulation. Completely dedicated to substations, power plant, railway, industrial and metro projects design & simulation. Having hands on experience in Earthing/Grounding, Lightning, EMF, LFI, Thermography, Wind, and Solar system.

ACHIEVEMENTS: -

- Developed a Risk assessment calculations sheet as per IEC 62305-2 & NFC 17 102, IEEE 998 for Lightning Protection System Design and Analysis for AIS, GIS, transmission lines and all the living being structures.
- NIDM member.
- Appreciation letter from DFCCIL for LPS design of 2x25kV TSS, SSP & SP substation.
- Appreciation letter from SJVN Nepal HEP power plant for earthing design.
- Time management award from Sterlite Pvt ltd for electrical site activity.
- Appreciation from UPL-2 for On-site LPS design.
- Published Modular cascaded H-bridge multilevel inverter with MPPT controller in ICRIEAT international conference.

DESIGN AND SIMULATION: -

- Railway network design and simulation: - (as per EN-50122-1&2)
 - DFCCI, Metro, tunnel railway network modeling and simulation by using CDEGS.
 - AC and DC traction power system - EMF check.
 - Electrical clearance study. - Stray current investigation
- Earthing simulation and Design: - (by CDEGS, AutoCAD, Argon, WinIGS & XGS Lab software as per IEEE-80 & 81, EN 7430, IS 3043, AS/NZS 4853)
 - HV and LV substation Grounding grid testing, design and simulation.
 - Soil resistivity testing and calculations. - Dangerous potential simulation.
 - Earth grid designs and validation. - LFI&EPR simulation over pipeline.
- Lightning calculations and Design: - (by CDEGS & AutoCAD software, as per BSEN/IEC-62305, NFPA 780, NFC 17 102, IEEE 998)
 - Risk assessment calculations. - LPS design & SPD Selection process.
 - Lightning current simulations
- AutoCAD Electrical: -
 - Analyzing all type of CAD designs. - Sectional drawings design.
 - Single line designs (SLD). - 3D designs.

ORGANIZATIONAL EXPERIENCE: -

CDEGS	: RESAP, MALZ, HIFREQ, MALT, SESCAD, FCDIST, FFTSES
Argon	: Lightning Protection System design.
ETAP	: Earth mat design & simulation and LV System studies.
AutoCAD	: Electrical & Mechanical- Drafting (2D and 3D).
PVsyst, VIRTUOSOLAR	: PV system design and 3D analysis.
QGIS	: Google map routing design.
DBYD	: To get electrical clearance for the risk assessment area.

JOB PROFILE: -

- Working as an Electrical project engineer in JACOBS Engineering, Mumbai from October 2020 to till data.
- Worked as an Electrical design engineer in Manav Energy Pvt Ltd, Bengaluru since May 2017 to September 2020.

QUALIFICATION: -

M.Tech - Power Electronics from NEC college under JNTUK (2014-2016), with 75%.

B.Tech - Electrical and Electronic Engineer from ANU (2010-2014), with 72%.

SIGNIFICANT PROJECTS: -

Ongoing Projects-

- Yarra Valley Water-Melbourne: Earth Potential Rise (EPR) and Low Frequency Induction (LFI) study of AC interference of transmission line over pipeline.
- Hallam railway station-Victoria: Insulation coordination study for 1500V DC network.
- Root cause analysis of DC traction leakage/stray current on GAS pipeline design of HCMT Pakenham depot.

Major Projects-

Project -1

Project Title : DFCCIL railway network design and simulation.

Client : L&T.

Role : Project Design engineer.

Duration : Dec 2019 – Oct 2020(team size-5).

Description:

The study is including of Earthing & Bonding, Lightning Protection System, EMI-EMC, Insulation coordination and Clearance study.

Earthing & Bonding study is done in CDEGS to evaluate the rail & touch potential as per EN 50122, IEC 60479. The lightning protection system design is done to protect the TSS, SSP & SP protection from lightning. The EMC study is done to know the rail potential on signal cable to ensure the signal working under normal conation.

Project -2

Project Title : TAQA and SP (photovoltaic) substations earth mat design - Egypt.

Client : GE T&D.

Role : Design Engineer

Duration : June 2018 – Sep 2018(team size-3).

Description:

The TAQA and SP PV plant are exiting in Egypt. The study is with 2.5kA of DC fault current and high soil resistivity.

The earth grid proposed to lay under 0.5 m from G.L with 100 m by 100 m spacing of copper conductor to get all the parameters which is are Step potential, Touch potential, Cross section area of the grid conductor and Grid resistance under the permissible limits.

Project -3

Project Title : Lightning Protection system design for Al-Thumama stadium - Dubai.

Client : Jain and Partners.

Role : Design engineer.

Duration : Dec 2017 – May 2018(team size-3).

Description:

Al-Thumama Stadium is located in Dubai. Properties of the structure is 160m OD, 60m ID –

and 45m height. According to IEC-62305 & NFC 17-102, the structure is protected with Class-I of lightning protection system design.

The advanced lightning protection system of early streamer emission is used to protect the stadium from lightning.

Responsibilities: -

- Input data collection for design and simulation.
- Internal meeting with team to understand the project.
- Methodology preparation, Modeling, Design and simulation.
- Report preparation and publication.
- Client interaction and closer meeting.

LIST OF PROJECTS HANDLED: -

Off-site Projects:

- 2x660 MW Adhani Thermal Power Plant Earthing & Lighting audit validation.
- SJVN, Napel-900MW Hydro Electric Power plant earthing design.
- Rohatang (Atal) Tunnel: Earthing design.
- JMRC: Earthing and Bonding design and simulation.
- HVDC transition station Pugalur: Earthing design.
- NTPC Kahalgaon: 2340MW thermal power plant Earthing design validation and plant audit.
- KG-D6: Lightning Protection System audit and Design validation.
- Hong Kong-IWMF: Total plant Earthing design.

On-site Projects:

- Sterlite Ahmedabad: Earthing, Lightning and Instrumentation audit of plant.
- UPL-2: Lightning Protection System design on site.
- MCPI: Lightning Protection System design.
- Napel-Arun-3: Soil resistivity measurement for Earth mat design.

PERSONAL PROFILE: -

Date of Birth : 2nd Sep 1992.
 Gender : Male.
 Marital Status : Single.
 Languages Known : Telugu, English. (Tamil, Kannada, Hindi)

DECLARATION: -

I hereby declare that the information furnished above is true to the best of my knowledge. I assure you that I will be responsible for its accuracy.

Place:

Date:

(Y. VIJAY KUMAR)

Annex 3

DRAFT ANNUAL ACTION PLAN OF ETD 47 FOR THE YEAR 2024-2025

Sr. No.	PROPOSED SUBJECTS
1.	IS/RDSO - TI/0002: 2023 - Indian Railway Standard for Power Quality Restorer (PQR) for 25kV and 2x25kV Traction Substation in Indian Railways
2.	IEC 62128 (Part-1): 2013 - Railway applications - Fixed installations - Electrical safety, earthing and the return circuit - Part 1: Protective provisions against electric shock
3.	IEC 62128 (Part-2): 2013 - Railway applications - Fixed installations - Electrical safety, earthing and the return circuit - Part 2: Provisions against the effects of stray currents caused by d.c. traction systems
4.	IEC 62128 (Part-3): 2013 - Railway applications - Fixed installations - Electrical safety, earthing and the return circuit - Part 3: Mutual interaction of a.c. and d.c. traction systems
5.	IEC 60913: 2024 - Railway applications - Fixed installations - Electric traction overhead contact lines systems
6.	IEC 60850: 2014 - Railway applications - Supply voltages of traction systems
7.	IEC 62695: 2014 - Railway applications - Fixed installations - Traction transformers
8.	IEC 60494 (Part-1): 2013 - Railway applications - Rolling stock - Pantographs - Characteristics and tests - Part 1: Pantographs for main line vehicles
9.	IEC 60494 (Part-2): 2013 - Railway applications - Rolling stock - Pantographs - Characteristics and tests - Part 2: Pantographs for metros and light rail vehicles
10.	IEC 62236 (Part-1): 2018 - Railway applications - Electromagnetic compatibility - Part 1: General

**GUIDELINES FOR RESEARCH & DEVELOPMENT PROJECTS
FOR FORMULATION AND REVIEW OF STANDARDS**

1 INTRODUCTION

Bureau of Indian Standards (BIS), as the National Standards Body of India is responsible for formulating Indian Standards for products, processes and services. In the pursuit of this endeavour, it has so far developed more than 22000 Indian Standards. Action Research and Research & Development Projects have always been part of the standardization process. However, there has been a growing realisation in the context of the increasing diversification, innovation and complexities in the manufacturing sector and evolution of services and also due to the fast pace of changes in the manufacturing and services landscapes, research & development projects have to be made an integral part of the standardization process. The idea is that in principle no standard should be developed without intensive and insightful research work, which is not confined only to the review of the existing literature and focus group discussions on the subject chosen for standardization, but also covers the detailed field level study of the existing processes and practices in product manufacturing and service delivery. This requires a large network of domain area experts to carry out the research & development work. The existing network encompasses only a small segment of experts, who are either associated with technical committees as members or belong to some R&D organizations. The Memorandum of Understanding with the premier educational institutions imparting technical and professional education opens the window to the opportunities to expand this network substantially by utilizing the intellectual capital that resides with the faculty and the research scholars in these institutions. This association is conceived not only as a way to promote research & development work necessary for standards formulation but also to enrich the research ecosystem in these educational institutions.

2 OBJECTIVES

Objectives of this Scheme are to:

- 2.1 support and commission research & development projects to generate knowledge, empirical data and insights that would help in formulating new standards and updating & upgrading the existing Indian standards;
- 2.2 expand the network of domain area experts to carryout research & development projects in the areas related to standardization and conformity assessment; and
- 2.3 enrich the research ecosystem in the educational institutions imparting technical and professional education.

3 RESEARCH & DEVELOPMENT PROJECTS

3.1 Research & development projects under these guidelines are described as follows:

A project aimed at comprehensive, in depth and incisive study of a product, process or service or all taken together in respect of a subject under standardization, encompassing literature review, analysis of the data from secondary sources, collection and analysis of data from primary sources and stakeholder consultations.

3.2 The duration of a project shall not exceed six months counted from the date of the award of the project to acceptance of the final report by the Sectional Committee concerned, provided that the Sectional Committee must not take more than one month to give its decision on the final report. Further provided that the time taken by the Sectional Committee for giving its decision shall not be counted. The Sectional Committee may extend the duration but for not more than 2 months in special circumstances, the reasons for which shall be recorded in the minutes of meeting of the Sectional Committee.

3.3 The upper limit for expenditure for a project shall be Rs 10 lakhs (including taxes) only.

3.4 BIS will publish a list of research & development projects along with Terms of Reference (ToR) on Standardization portal or any other suitable digital platform.

3.5 If any organization or an expert on behalf of an institute wants to propose a research & development project on any new and emerging area in which they have expertise, they can do so through the same platform for the consideration of the Sectional Committee.

4 TERMS OF REFERENCE (ToR)

4.1 The ToR of Research& development project shall be prepared by the Sectional Committee concerned, and shall contain:

- a) Title, background and objectives of the study;
- b) Expected research methodology (brief information, for example, survey, testing, industry visits, etc.);
- c) Scope of study;
- d) Outline of the tasks and final deliverables expected from the Proposers;
- e) Methods of review, schedule for submitting the 1st draft report and project completion report;
- f) Any support or inputs to be provided to the Proposer; and
- g) Maximum duration of project and timelines for submission of proposal.

4.2 While preparing the Terms of Reference (ToR) the sectional committee may consider the following points as a research & development project may include one or mix of the following:

- a) Secondary research based on internet or published information including authentic data sources;
- b) Survey based research (including industry visits) to ascertain prevailing market conditions and practices, standards in use, industry and consumer preferences, availability of infrastructure, technical capabilities, comparative trends, economic trends;
- c) Ascertaining compliance to existing and proposed standards through testing, review of past test reports, other validation and verification checks; and
- d) Basic and innovative research to establish normative criteria. Criteria may include performance, health, safety, environmental impact.

5 APPROVAL OF COMISSIONING OF THE RESEARCH AND DEVELOPMENT PROJECTS

5.1 There shall be a Review Committee for approving the projects recommended by the Sectional Committee. The composition of Review Committee shall be as follows:

DDG (SCMD)	: Chairperson
DDG (Standardization) concerned	: Member
DDG (Certification)	: Member
DDG (Labs)	: Member
Officer in-charge for research works in SCMD	: Member Secretary

5.2 The Head of Technical Department concerned and Member Secretary of the Sectional Committee shall apprise the review committee about the project and explain the rationale behind the proposed research & development project.

6 ELIGIBILITY CRITERIA

6.1 The following shall be eligible for carrying out research & development projects under the Scheme:

- a) Academic institutions & universities having MoU with BIS and faculties and research scholars thereof;
- b) Member(s) of Technical Committees of BIS.

c) Government research laboratories of repute like CSIR, DRDO, ICAR etc. (Added through amendment dated 01.02.2024)

6.2 Faculties and research scholars shall submit proposals through their institute. Members of technical committees belonging to any association/organization shall submit the proposals through their association/organization. Members of technical committees in personal capacity can submit their proposals directly to BIS, however if carrying out a research & development project requires collaboration with any institution/organization, concurrence of the same shall also be submitted.

7 PROCEDURE FOR APPLICATION

7.1 Submission of Proposal

7.1.1 Applications for undertaking research & development projects shall be submitted in the manner prescribed by the Bureau and within the prescribed timelines,

7.1.2 Proposer(s) shall submit their proposal in a “single stage - two envelope bid system” consisting of separately sealed “Technical and Financial proposals”. The Technical Proposal shall be submitted as per format prescribed in **Annex A** and the Financial Proposal shall be submitted in the format prescribed as per **Annex B**, clearly specifying expected expenditure against each element such as manpower, equipment (shall not include computer hardware and software), travelling, testing, consumables, stationery, overheads, etc.

7.1.3 There shall be maximum one proposal from one institute on a given subject.

7.1.4 No contractual obligation whatsoever shall arise until a formal agreement is signed and executed between the Bureau and the Proposer.

7.2 The proposals shall inter-alia consist of the following:

7.2.1 In respect of the research & development projects put up by the Bureau:

- a) Details of the Project team along with the organization/institution associated with;
- b) The CV of the Project leader and expert/expert(s) to be associated with the project and a letter from organization authorizing Project Leader and expert/expert(s) to undertake the research as proposed.
- c) A write up on the understanding of the scope and objectives of the project.
- d) Methodology (sampling size, if applicable) to be adopted for the proposed study with a clear road map and time plan for completion of the project;
- e) Stage wise timelines for completion of the project.

7.2.2 In respect of research & development projects proposed by any expert/organization:

- a) Details of the Project team along with the organization/institution associated with;
- b) The CV of the Project leader and expert/expert(s) to be associated with the projects and a letter from organization authorizing Project Leader and expert/expert(s) to undertake the study as proposed.
- c) Objective that will be achieved and scope of the project clearly highlighting the need of such study and what would be the final deliverable;
- d) Methodology (sampling size if applicable) to be adopted for the proposed study with a clear road map and time plan for completion of the project;
- e) Details of infrastructure facilities available for the project, in the institution and additional facilities required (if any) for carrying out research.

- f) Stage wise timelines for the completion of the project

7.3 The Head of the concerned institution while forwarding the application and nominating the project leader shall certify that:

- a) the core facilities (land, buildings, laboratory, manpower and other infrastructure etc.) are available and will be provided to the Project Leader to work on the proposed project,
- b) the organization will discharge all its obligations, particularly in respect of management of the financial assistance given, and
- c) no other funding is being received/sought for the project proposed to be sanctioned by BIS.

8 PROCEDURE FOR APPROVAL WITHIN BIS

8.1 There shall be a Research Evaluation Committee (REC) to evaluate the proposals received, the composition of which shall be as follows:

DDG (PRT)	: Chairperson
Head (CMD) concerned	: Member
Head (LPPD)	: Member
Head of the Technical Department concerned	: Member
Director Finance	: Member
Two Experts from the Sectional Committee concerned	: Members
Head (SCMD)	: Member Secretary

*The experts shall be nominated by the Sectional Committee and the nominated members shall give a declaration to the effect that there is no conflict of interest with respect to the project.

8.2 The evaluation and selection will be as per Quality and Cost Based Selection (QCBS) method (Rule 192, GFR 2017) which is explained in **Annex C**.

8.3 The criteria for evaluation of technical proposal shall be as under:

Sl No.	Criteria	Max. Marks	Score by REC
1	Profile of key individual/individuals to be associated with the research project	10	
2	Experience of the individual/organisation in conducting research projects in the relevant discipline	20	
3	Understanding of Scope, Objectives and deliverables	15	
4	Methodology	30	
5	Work plan/Execution strategy	15	
6	Chapterisation, contents and lay out of the proposed report	10	
TOTAL		100	

Note: REC may call for a presentation by the proposers if deemed necessary.

8.4 The minimum qualifying marks shall be 70. All the proposals with marks below 70 shall be considered rejected.

8.5 REC may refer back, advise changes for reconsideration or reject any proposal.

8.6 REC shall open the financial proposals (bids) within 7 days from completion of technical evaluation.

8.7 A final score sheet of all the proposers shall be made as detailed in **Annex C** and the proposer getting the highest combined score shall be selected for awarding the project.

8.8 The member secretary (REC) shall send the selected proposals to DG/DDG Standardization concerned, as per their delegated powers, for consideration and approval for sanction of the project.

8.9 After the approval of project, the member secretary (REC) shall inform the concerned technical department and the proposer regarding the decision.

8.10 After the sanction of fund is approved, the draft agreement (prepared in line with model agreement given at **Annex D**, to be modified on case-to-case basis) shall also be prepared by the Member Secretary (Sectional Committee), clearly highlighting the payment term. The Head (Technical Department) shall sign the agreement on behalf of BIS in all cases.

8.11 In case the proposer to whom the project is awarded declines to take up the project, the Research project shall be awarded to the proposer getting the next highest combined score among the qualified proposers.

9 SIGNING OF AGREEMENT AND ISSUING OF SANCTION LETTER

9.1 After receipt of duly signed agreement from the proposer and after the receipt of the approval of competent authority, a sanction letter shall be issued by the concerned Head (Technical Department) to the organization/individual member. The project would be considered to have commenced from the date the sanction letter is issued.

10 FUNDING

10.1 The mode of payment for Research & development projects shall be as follows:

- a) First instalment up to a maximum of 30 percent of the total approved project cost would be released after approval of the project.
- b) Second instalment to the extent of 50 percent of the approved estimated cost would be released on the submission of progress report along with the report on utilization of the 75 percent of the fund and acceptance of the same by the Sectional Committee.

- c) The balance amount shall be released after submission of the final project report along with utilization certificate for the fund released and its acceptance by the Sectional Committee.

10.2 Release of each instalment is subject to satisfactory progress, required stage - wise deliverables and submission of the Utilization Certificate (UC) as per Form GFR12-A of GFR 2017 along with the statement of expenditure (SoE) issued by the Competent Authority.

11 PROGRESS REPORT AND MONITORING OF PROJECT

11.1 The relevant Sectional Committees of BIS will monitor the progress of project to ensure that the project is progressing as per the planned arrangement. However, member secretary of the concerned Sectional Committee under overall coordination of HoD would be the controlling/link officer for Research & Development projects and would constantly monitor the progress of the project every 30-45 days. Any delay in implementation of project should be duly justified by the Project leader and shall be put up to Research Evaluation Committee (REC) for approval.

11.2 The Sectional Committee shall review and give its acceptance of the progress reports submitted, within 3 weeks.

12 SUBMISSION OF FINAL PROJECT REPORT (FPR)

12.1 The FPR must be detailed and should include information about:

- a) the original objective(s) of the project,
- b) how far these objective(s) have been achieved, and
- c) how the results will benefit the development of the national standard(s) and
- d) a copy of final working draft of the concerned standard(s) (wherever applicable)
- e) include clear inferences, recommendations regarding their use in the proposed standards,
- f) all references used, raw data of surveys, sampling, testing and experiments,
- g) undertaking that all the information presented is authentic.

12.2 FPR received in BIS would be put up to the concerned Sectional Committee, which will take necessary action for preparation/revision of standard appropriately. The Project leader shall assist in the disposal of comments received on the research project, draft standard and for the preparation of the finalized draft, as may be desired by the Sectional Committee.

12.3 The proposer shall submit the Project Completion Report (PCR), within one month of completion of project along with the Utilization Certificate of the fund released as per Form GFR 12-A of GFR 2017 and the statement of expenditure (issued by the Competent Authority -in case of Govt. organization / Chartered Accountant in case of private organization).

13 RESULTS OF RESEARCH & DEVELOPMENT

13.1 Project Leader(s) would be encouraged to publish the results of research & development. While doing so, acknowledgement to the effect that financial assistance was received from BIS should be made in the research paper(s) published. BIS should be acknowledged in similar type of other published work/press reports.

13.2 One re-print of each research paper(s) published as a result of the work done under the BIS funds shall be sent to BIS as and when published.

14 INTELLECTUAL PROPERTY RIGHTS

14.1 Ownership of any intellectual property, including but not limited to confidential information, know-how, patents, copyrights, design rights, rights relating to computer software, and any other industrial or intellectual property rights, developed solely by Proposer shall be vested with that Party.

14.2 Ownership of any intellectual property, including but not limited to confidential information, know-how, patents, copyrights, design rights, rights relating to computer software, and any other industrial or intellectual property rights, developed solely by the Bureau shall be vested with that Party.

14.3 The Intellectual Property arising out as an outcome of research project undertaken under these guidelines shall be vested with Bureau.

15 OPERATION OF FUNDS

15.1 The utilization certificate of the funds received in previous instalment (if any) to BIS should be annexed with the Statement of all equipment, books, etc purchased out of the funds certified by the Head of the organization. The name, description of the equipment, cost in rupees, date of purchase, and the name of the supplier to be given in the list. The main purpose/function of the equipment may also be mentioned against each item.

15.2 Any unspent balance lying with the organization should be refunded to BIS after the finalization of the draft immediately, by means of demand draft or online transfer.

15.3 The Head of the concerned standardization department of BIS shall ensure that the project leader submits the utilization certificate in the manner prescribed in Form GFR 12-A of GFR 2017.

15.4 Head of the Standardization department shall also ensure that the operation of funds is monitored strictly as specified in **Annex E**. Further the Project Leader is also fully aware and shall adhere to the obligations of his/her as given in this procedure.

16 OTHER REQUIREMENTS

16.1 Organizations receiving financial assistance for research & development projects from BIS would have to maintain separate accounts for each research project.

16.2 In the event of a Project Leader's absence from his normal place of duty for two months at a stretch, the Head of the organization would need to immediately nominate an Alternate Project Leader(s) to supervise the implementation of the project and such a name has to be approved in advance by BIS. In any event, a Project Leader shall give prior notice to BIS of his intention to stay away from the project.

16.3 Items of equipment, etc should be purchased on the basis of the established rules and procedures of the entity/organization.

16.4 Stock register of all equipment, books, etc purchased out of the funds shall be maintained.

16.5 Any capital-intensive equipment/devices purchased using financial assistance from BIS for research & development projects shall be allowed to be retained by the proposer for their research activity etc.

16.6 The organization shall have to ensure that expenditure with respect to TA/DA are made only as per their own norms but under no circumstances the executive/business class air travel or stay in a five-star hotel is made. The overhead expenses should not be more than 20 percent of the cost of the project.

16.7 The Project Leader must ensure that the concerned organization's newsletter would carry information on the activities and accomplishments of the various projects funded by the BIS.

16 TERMINATION OF PROJECT:

The research & development project can be terminated in case of any of the following:

- a) the approval of research & development project may be treated as withdrawn, if the sanctioned research & development project does not commence within one month from the date of receipt of the sanction letter, unless otherwise authorized by BIS;
- b) A Proposer may request for the withdrawal of a research & development project even after commencement of the project. In such case the entire fund given till that date shall be refunded to the Bureau; and
- c) if the Proposer fails to submit Progress report/Completed Project report within the prescribed timelines.

The REC shall take decision on all cases of termination.

18 RESOLUTION OF DISPUTES

Dispute Resolution: In case of any dispute that cannot be resolved amicably, it shall be referred to Sole Arbitrator appointed by the Director General of the Bureau of Indian standards, whose decision shall be final and binding upon both the parties. The provisions of the Arbitration and Conciliation Act, 1996, as amended from time to time, shall be applicable.

ANNEX A

TECHNICAL PROPOSAL

1. Name of the Proposer and Organization	
2. Project title	

3. Project leader

a) Title: Prof/Dr/Mr/Ms	Sex
b) Name:	M/F
c) Full official address	
Mobile/Telephone Fax E-mail	
d) Designation	
e) Date of birth	
f) Academic qualifications along with year of completion	
g) Experience	

4. Other members of the research team (give name, address, experience and academic qualifications for each member)

1. Name	Designation: Address: Experience: Academic Qualifications:
1. Name	Designation: Address: Experience: Academic Qualifications:

5. Research support availed/being availed/applied for by the Project leader from different sources, including BIS, during the last 5 years:

Funding agency	Title of the project and reference number	Duration (from mm/yyyy to mm/yyyy)	Percentage of time devoted /being devoted/to be devoted, in man months	Amount in lakh Rs.

6. Details of facilities available with the institute/organization w.r.t. the research & development project

Facilities	Relevance to project
1.	

7. Aims and significance of the project

(Include the current status of work in area, both in India and abroad, with appropriate reference list at the end; identify lacunae, define question to be investigated; list briefly specific objectives of investigation. ethical clearance be enclosed where necessary).

8. The CV of the Project leader and expert/expert(s) to be associated with the projects and a letter from organization authorizing Project leader and expert/expert(s) to undertake the study as proposed.

9. Objective that will be achieved and scope of the project clearly highlighting the need of such study and what would be the final deliverable.

10. Methodology (sampling size if applicable) to be adopted for the proposed study.

11. Road map (Stage wise timelines for the completion of the project) and time table for completion of the project

12. Plan of work, methods and techniques to be used.

13. List of awards and honours conferred on the Project leader with dates.

14. Deliverables

15. Declaration and attestation:

I certify that all the details declared here are correct and complete.	Date:
Signature of Project leader	

12. Certificate of the institution:

This is to certify that	
a) we have read the terms and conditions of the BIS Research & Development Guidelines necessary for the compliance of the same.	
b) the necessary institutional facilities are available and will be provided for the implementation of this research proposal being submitted to the BIS for funding.	
c) Full account of expenditure will be rendered by the institution.	
Name of the head: of the institution	
Signature with date:	
Seal:	

ANNEX B
FINANCIAL PROPOSAL FORMAT
[To be submitted on letterhead wherever applicable]

To:
Bureau of Indian Standards
Manak Bhavan, 9 Bahadur Shah Zafar Marg
New Delhi – 110002, India

Sub: Financial Proposal for Research & development Project on (Title: _____)
for Bureau of Indian Standards (Research guidelines document no. _____ dated: ____ - ____ -2023).

Dear Sir,

We are pleased to submit our Financial Proposal for Research & Development Project on (Title: _____) for Bureau of Indian Standards as per the terms and conditions of the Research & Development guidelines document (Ref No.: _____ dated: ____ - ____ -2023).

1. We hereby declare that our financial proposal is unconditional in all respects.
2. Our financial proposal is as follows:

3. Cost of the Project:

Sl no.	Budget items	Amount
1	Manpower cost	
2	Consumables [Chemicals, samples, testing glassware, stationery, books etc, information search (from databases)]	
3	Equipment	
4	Travel	
5	Any other/Overhead expenses	
	Total project cost	

*Please write NA in case any item is not applicable

- a) The prices should be quoted in Indian Rupees above by the proposer.
- b) The quoted price should be inclusive of all applicable taxes and charges.
- c) Fund shall be released after deducting TDS as per applicable provisions of GST and income tax.
- d) Justification of cost (for each item of equipment, consumables and travel. Quotation(s) for equipment should also be enclosed).

Date:

Place:

Name and Signature of the head of the institution

(Rubber seal of the proposer/institution/organization, as applicable)

Yours faithfully,

(Signature of the Project leader)

(Name and Designation of the proposer)

ANNEX C

Stage 1: Evaluation of Technical Proposal:

- a) The proposal will be evaluated against the criteria defined at clause 8 in these Guidelines. The proposer may be required to provide additional details as deemed necessary by the REC.
- b) Upon technical evaluation of each proposal, “Technical marks” out of 100 marks will be assigned to every proposal.
- c) The proposals with score 70 or more marks in technical evaluation, will qualify for the evaluation of the financial proposal.
- d) The proposer with the highest marks in technical proposal will be awarded 100 “Technical Score” and subsequently other proposers will also be awarded “Technical Score” relative to the highest technical marks for the final composite score calculation purpose e.g., if the highest technical marks is 90 then “Technical Score” is $(90/90) \times 100 = 100$, hence the proposer with highest technical marks will score 100 “Technical Score”. Similarly, another proposer who scored 80 marks, will get $(80/90) \times 100 = 88.88$ “Technical Score”. Following formula will be used for the “Technical Score” (TS) calculation:

$$\text{Technical Score (TS)} = \left[\frac{\text{Proposer's Technical Marks}}{\text{Highest Technical Marks}} \right] \times 100$$

- e) The details of technical evaluation parameters are provided at clause 9.

Stage-2 Evaluation of Financial Proposal

- a) The evaluation will be carried out if financial proposals are complete and computationally correct.
- b) Upon financial evaluation of each proposal, the lowest financial proposal will be awarded 100 “Financial score”. The “Financial Score” of other proposer(s) will be computed by measuring the financial proposal against the lowest financial proposal. Following formula will be used for calculating “Financial Score”:

$$\text{Financial Score (FS)} = \left[\frac{\text{Lowest Financial proposal}}{\text{Proposer's Financial Proposal}} \right] \times 100$$

Stage-3 Computation of Combined Score

The “Combines Score” is a weighted average of the Technical and Financial Scores. The ratio of Technical and Financial Scores is 70:30 respectively. The Combined Score will be derived using the following formula:

$$\text{Combined Score} = [(\text{TS} \times 0.70) + (\text{FS} \times 0.30)]$$

The responsive proposers(s) will be ranked in descending order according to the Combined Score, which is calculated based on the above formula. The highest-ranking proposer as per the Combined Score will be selected for award of Research Project.

ANNEX D

MODEL AGREEMENT

(To be modified on case-to-case basis)

This Deed of Agreement made this _____ day of _____ (Month & Year) between Bureau of Indian Standards having Head Office at Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi – 110 002 (hereinafter called 'BIS', which expression shall, wherever the context so admits, include its successors and assigns) on one part and (name of the organization/expert) (hereinafter called _____ which expression shall, wherever the context so admits, include their heirs, executors, administrators, legal representative and assigns) of the other part, witness as follows:

1. Whereas (name of the organization/expert) through (name of the Project Leader) has submitted a proposal to BIS pertaining to Research & development project titled _____ for consideration and BIS has accepted the proposal.
2. That duration of the Research & development project shall be ___ months with periodic and final reviews. The total cost of the project shall be Rs_____/ - (Rupees in words) for the complete project. No further expenditure shall be borne by BIS on any account of this project including escalation of time.
3. The fund would be utilised for the specific project/assignment as approved by BIS and shall be spent within the specified time. Any portion of the fund which is ultimately not required for expenditure for the approved purpose shall be duly surrendered to BIS.
4. (Name of the organization/expert) shall not entrust the implementation of the project/assignment approved by BIS for which fund has been received to any other institution/expert or to divert the fund received from BIS as assistance to any other institution/expert/proposer.
5. (Name of the organization/expert) indemnifies BIS from any legal and/or financial encumbrance arising out of any infringement of IPR/licensing of IPR/technology transfer/commercialization.
6. (Name of the organization/expert) shall maintain an audited record in the form of a register for permanent, semi-permanent assets acquired solely or mainly out of BIS fund. Once the Research & development project is completed satisfactorily, the organization taking up the Research project may retain the equipment/devices for their Research & development activities, etc. The equipment procured through BIS fund should bear a label "BIS Funded".
7. BIS shall release the funds for the project as follows:
 - a) First instalment up to a maximum of 30 percent of the total approved project cost would be released after approval of the project.

- b) Second instalment to the extent of 50 percent of the approved estimated cost would be released on the submission of progress report along with the report on utilization of the 75 percent of the fund and acceptance of the same by the Sectional Committee.
- c) The balance amount shall be released after submission of the final project report along with utilization certificate for the fund released and its acceptance by the Sectional Committee.

8. The completion of the Research & development project shall remain the responsibility of (name of the organization/expert) even if the project leader is not available due to any reason whatsoever. After completion of the project, a Project Completion Report giving details (objective(s) achieved, raw data of surveys, sampling, testing and experiments) of shall be submitted by the Project leader the original objective(s) of the project,

9. (Name of the organization/expert) shall ensure the completion of the project under the guidance and supervision of any other faculty/researcher, if the nominated project leader would not be available due to any reason. Such a faculty member/researcher can only be nominated with the approval of BIS.

10. In case (name of the organization/expert) is unable to complete the project to the satisfaction of BIS in stipulated time or extended time and leads to termination of the research project, BIS shall be entitled to claim the refund of fund so sanctioned with interest @ 10 percent thereon from (name of the organization/expert).

11. The authority to extend the duration of the project shall rest with BIS.

12. BIS shall have the right to formulate monitoring methodology of the Research & development project.

13. Dispute Resolution: In case of any dispute that cannot be resolved amicably, it shall be referred to Sole Arbitrator appointed by the Director General of the Bureau of Indian standards, whose decision shall be final and binding upon both the parties. The provisions of the Arbitration and Conciliation Act, 1996, as amended from time to time, shall be applicable.

14. Undertaking given by project leader, if any, shall be part of the agreement.

15. (Name of the organization/expert) shall be responsible for discharge of all its obligations of the project through the nominated project leader or any other expert/expert(s) in case of necessity particularly in respect of management of financial assistance given to them. (Name of the organization/expert) shall refund any excess/unutilized amount of the fund to BIS.

16. Release of subsequent instalments is subject to satisfactory progress, required stage - wise deliverables and submission of the Utilization Certificate (UC) as per Form GFR12-A of GFR 2017 along with the statement of expenditure (SoE) issued by the Competent Authority.

17. (Name of the organization/expert) shall ensure that Project leader shall give presentation on the progress of project to BIS as and when directed by BIS for continuation of the project,

and shall assist in the disposal of comments received related to the Research & development Project.

18. The project shall be deemed to have been commenced from the date of release of sanction letter.

19. (Name of the organization/expert) shall ensure that while publishing the results of research & development, acknowledgement to the effect that financial assistance so received from BIS be made in the research papers published/ other published work/ press reports.

20. Procedure for screening/evaluation, selecting, monitoring Research & development projects prescribed in “Guidelines for Research & Development Projects for Formulation and Review of Standards’ shall be part of the agreement.

.....

ANNEX E

OPERATION OF FUNDS AND PROGRESS REPORT

1. Title of the Project:	Project number:
2. Name & Address of Project leader:	Date of Commencement: dd/mm/yyyy

3. Details of Equipment Purchased (if any):

Name of equipment	Cost	Supplier	Date of purchase/ placing order for each item of equipment

NOTE - The equipment fund once fixed cannot be enhanced. Project leaders are advised to give authenticated estimates of the cost of equipment. Equipment should invariably be purchased within 1 month from the date of receipt of the fund and/or sanction letter.

4. Fund received_____.

5. Expenditure made in Rupees: (Please provide the details)

Expenditure	Amount	Taxes (as applicable)	Total
Manpower cost			
Consumables			
Equipment			
Travel			
Others			
Grand Total			

6. Amount saved (if any) from the last instalment: Rs_____.

7. Date on which scheme will complete its normal tenure of months _____.

8. Whether extension beyond normal tenure has been requested. Yes /No.

If yes, justification for extension and programme of work to be completed. Also mention as to why the work could not be completed as per the original plan.

{Extension beyond normal tenure should be requested at the Project Monitoring Session before end of tenure (as given in ToR)}.

9. Constraints (if any) faced in the progress of work and suggestions to overcome them.

10. Any deviation from original plan with its nature and cause.

11. List of publication giving full bibliographic details accrued from this project (copies of the paper (s) should be enclosed).
12. Summary of work done (200 words).
13. Proposed programme of work for the next month (1000 words).
14. Detailed Progress Report enlisting the objectives in beginning briefly (up to five pages maximum).

Signature of Project leader
Date:

Note: No column should be left blank; write not applicable (NA), wherever applicable.

TEMPLATE FOR THE TERMS OF REFERENCE FOR THE R&D PROJECTS

(Refer to the Guidelines on R&D Projects issued vide note SCMD/R&D dated xx-09-23)

- 1. Title of the Project:** Mention the title of the project.
- 2. Background:**
 - a) Mention the Technical Committee and Division Council the project is related to;
 - b) Mention the standard / document no. for the standard under development or review to which the project is related to;
 - c) Briefly explain the rationale for the commissioning of the project.
- 3. Scope:** Mention the scope of the project.
- 4. Expected Deliverables:** Mention the outcome of the project.
- 5. Research Methodology:**

Mention the essential components of the methodology like mid-term review, focus group discussions, visits to the manufacturing units and/or laboratories, collection and testing of samples etc. with the details of the sample size for them as applicable.
- 6. Requirement for the CVs:**

Mention the requirement for the CVs of the persons to be engaged for the project.
- 7. Timeline and Method of Progress Review:**

Suggest the stagewise timelines including that for the submission of the first draft, final draft and the report and the mechanism for the review of the progress.
- 8. Support BIS will Provide:**

Indicate the support BIS may provide in terms of the standards, other publications, information regarding manufacturers and labs etc.

BUREAU OF INDIAN STANDARDS'
SCHEME FOR RECOGNITION OF
STANDARDS DEVELOPING ORGANIZATIONS (SDOs)

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Full forms of the abbreviations used in this scheme

1. BIS Bureau of Indian Standards
2. WTO World Trade Organisation
3. TBT Technical Barriers for Trade
4. SDO Standards Developing Organisation
5. INSS Indian National Strategy for Standardisation
6. SNAP Standards National Action Plan
7. ISO International Organisation for Standardisation
8. IEC International Electrotechnical Commission
9. MSME Micro, Small and Medium Enterprises
10. CEO Chief Executive Officer
11. ICS International Classification for Standards
12. NMC National Mirror Committee
13. CPGRAMS Centralized Public Grievance Redress and Monitoring System
14. RTI Right to Information
15. GSTIN Goods and Services Tax Identification Number
16. INR Indian Rupee
17. RTGS Real-time gross settlement
18. NEFT National Electronic Funds Transfer
19. SWIFT Society for Worldwide Interbank Financial Telecommunication code

Bureau of Indian Standards'
Scheme for Recognition of
Standard Developing Organizations (SDOs)

1 INTRODUCTION

Bureau of Indian Standards (BIS), the National Standards Body of India, was established under the Bureau of Indian Standards Act, 1986, now repealed by the Bureau of Indian Standards Act, 2016. Bureau, as the National Standards Body, is *inter alia* responsible for harmonious development in standardisation and matters connected therewith, both within the country and at international level. In line with its mandate, Bureau is engaged in the establishment, review and promotion of the Indian Standards, in relation to goods, articles, processes, systems and services.

Further, there are other premier Standards Developing Organizations (SDOs) in the country who have been formulating sector-specific standards and their standards are widely implemented in their concerned sectors. Also, various industry and professional bodies have ventured into developing sector-specific or industry standards and are looking for validation of their processes and recognition of their standards as Indian Standards. In view of this, the need for a recognition scheme for SDOs has been documented in the Indian National Strategy for Standardisation (INSS) released by Ministry of Commerce & Industry, Govt. of India and in the Standards National Action Plan (SNAP) of Bureau.

India is a signatory to WTO-TBT Agreement under which it is to be ensured that the Central Government, State Government and non-Governmental Standardisation Bodies operating within India as well as regional standardisation bodies within India accept and comply to the Code of Good Practice for the Preparation, Adoption and Application of Standards provided in the Annex 3 of the WTO-TBT Agreement.

Further, the statutory provisions of Section 10(2)(c) of the BIS Act, 2016 and Rule 30 of the BIS Rules, 2018 confer upon Bureau, powers to recognise or accredit any institute in India or outside which is engaged in standardisation. This policy of recognition of SDOs shall ensure "One Nation One Standard" for one product or service etc, and will lead to the harmonisation of standards in the country ensuring WTO-TBT Code of Good Practice for the Preparation, Adoption and Application of Standards.

Under the scheme, the Bureau envisages the recognition of the other SDOs for attaining the vision of "One Nation One Standard".

2 SCOPE

This document describes the criteria for recognition (including terms and conditions), procedure for recognition and operation of the scheme for recognition of Standards Developing Organizations (SDOs) in India, whether governmental or non-governmental, by the Bureau of Indian Standards.

3 DEFINITIONS

In this document, unless the context otherwise requires, —

- (a) "Bureau" means the Bureau of Indian Standards established under Section 3 of the Bureau of Indian Standards Act, 2016;

(b) “Consensus” means general agreement, characterized by the absence of sustained opposition to substantial issues by any important part of the concerned interests and by a process that involves seeking to take into account the views of all parties concerned and to reconcile any conflicting agreements. Consensus need not imply unanimity. Clarification was sought from Additional Solicitor General by Legal Department (vide ref: Law/8/392/2004 dated 28 Jan 2004) and it was clarified that the word ‘consensus’ read with the phrase ‘substantial support’ indicates that the decision does not have to be taken on the basis of unanimity but having regard to the views of reasonably more than the majority of members reflecting different institutions or interests.

(c) “Draft standard” means proposed standard that is available generally for comment or approval.

(d) “Field of standardization” means domain of standardization - (deprecated), group of related subjects of standardization. Engineering, transport, agriculture, and quantities and units, for example, could be regarded as fields of standardization.

(e) “Indian Standard” means the standard including any tentative or provisional standard established and published by the Bureau, in relation to any goods, article, process, system or service, indicative of the quality and specification of such goods, article, process, system or service and includes— (i) any standard adopted by the Bureau under sub-section (2) of section 10 of BIS Act, 2016; and (ii) any standard established and published, or recognised, by the Bureau of Indian Standards established under the Bureau of Indian Standard Act, 1986 (63 of 1986); and (iii) any standard established and published, or recognised, by the Indian Standards Institution and which is in force immediately before the date of establishment of the Bureau; which was in force immediately before the commencement of BIS Act, 2016.

(f) “International Standard” means standard that is adopted by an international standardizing or standards organization (eg. ISO and IEC standards) and made available to the public.

(g) “International Standardization” means standardization in which involvement is open to relevant bodies from all countries.

(h) “Review” means activity of checking an Indian Standard to determine whether it is to be reaffirmed, changed or withdrawn.

(j) “Revision” means introduction of all necessary changes to the substance and presentation of an Indian Standard. The results of revision are presented by issuing a new revised Indian Standard.

(k) “Scheme” means Bureau of Indian Standards’ scheme for recognition of Standard Developing Organizations (SDOs).

(m) “Standardization” means activity of establishing, about actual or potential problems, provisions for common and repeated use, aimed at the achievement of the optimum degree of order in a given context. In particular, the activity consists of the processes of formulating, issuing and implementing standards. Important benefits of standardization are improvement of the suitability of products, processes and services for their intended purposes, prevention of barriers to trade and facilitation of technological cooperation.

(n) “Standards Developing Organizations” means organizations that develop and publish industry or sector specific standards through the process of consensus and participate in the regional and international standardization process.

(p) “Subject of standardization” means topic to be standardized. The expression “product, process or service” has been adopted throughout this Guide to encompass the subject of standardization in a broad sense, and should be understood equally to cover, for example, any material, component, equipment, system, interface, protocol, procedure, function, method or activity. Standardization may be limited to particular aspects of any subject. For example, in the case of shoes, criteria could be standardized separately for sizes and durability.

(q) “Withdrawn Standard” means an invalid Indian Standard which has been discontinued as it no longer represents the most current, reliable, or available information.

(r) “Work Programme” means a document containing information on the work being carried out by the SDO. Requirements for the content and notice of the existence of the Work Program are included in the WTO/TBT Code of Good Practice for the Preparation, Adoption and Application of Standards.

4 CRITERIA FOR RECOGNITION

4.1 General Requirements

4.1.1 The SDO shall be a governmental or non-governmental professional body or institution, group of stakeholders or industry association, incorporated, registered or otherwise recognized as a legal entity in India.

4.1.2 The SDO shall be so constituted as to provide a reasonable assurance of continuity of operation in the production and maintenance of standards.

4.1.3 The SDO shall provide the details of the technical area of interest of formulating the standards.

4.1.4 The SDO shall be actively developing and maintaining standards, in a timely manner with an experience of at least 3 years in the technical area of interest; and shall be able to demonstrate the relevance of the standards developed or under development, to India. The relevance to India can be demonstrated by,

- a) appropriate participation of Indian experts of the respective fields in the technical committees involved in standardization in the same or related fields either nationally or internationally; and
- b) availability of facilities and resources in India to meet the requirements of standards formulation activities (see Para **4.2**).

4.1.5 The SDO shall,

- a) Comply with the procedures for establishment and review of standards as specified in Para **4.3.2**.
- b) Provide for designation, publication, review and maintenance of the standard(s) produced.
- c) Provide for an appeal mechanism.
- d) Cooperates with the Bureau in standards planning and coordination activities of mutual interest.
- e) Participate in international standards activities through the Bureau.
- f) Agree to the terms and conditions mentioned at Para **6.1**.

4.2 Resource Requirements

4.2.1 The SDO shall describe the physical resources for the development and maintenance of standards and demonstrate the availability of appropriate structural

facilities for providing adequate secretariat support for the development, maintenance, sale and promotion of standards.

4.2.2 The SDO shall have separate manpower having fair understanding about standardization, including principles, policies, techniques and prevailing best practices for standards formulation. They shall have experience of standards formulation and also technical knowledge of the field of working.

4.2.3 The SDO, if involved in certification, training or similar activities shall demonstrate a clear separation of the management and policymaking functions of such activities from those of standards development. If applicable, the SDO shall demonstrate compliance by reference to policy, organizational or procedural documents.

4.2.4 The SDO shall define the competence requirement for its staff keeping in view the technical area(s) in which it operates and identify the number of staff members directly involved in the preparation of standards and related activities, and the functions they perform within the organization. The SDO may provide its organizational chart to establish the human resource involved in the activity.

4.3 Process Requirements

4.3.1 Strategy

Standards are to meet the needs of the market-place. The standards being formulated shall not hinder the trade in any way, however, not at the expense of the quality for the consumers. The SDOs shall take actions to resolve an unjustified impediment or inhibition to trade.

4.3.2 Procedure for Establishment of Standards

4.3.2.1 The procedure for establishment of standards shall be in accordance with WTO-TBT 'Code of Good Practice for the Preparation, Adoption and Application of Standards' as given in Annex 3 of the WTO-TBT Agreement, and the six principles of standardization which are given below:

- a) **Transparency** — Transparency to be exercised across all stages of the standard setting process from proposal to adoption, including open access to information or documents needed to participate in technical committees. Transparency promotes opportunity to comment early in the development stage so that they can be taken into account. Publication of adopted standard and work programme should be done on a regular basis as per WTO-TBT 'Code of Good Practice for the Preparation, Adoption and Application of Standards'.
- b) **Openness** — Participation shall be open to all persons who are directly and materially affected by the activity in question. There shall be no undue financial barriers to participation. Voting membership on the consensus body shall not be conditional upon membership in any organization, nor unreasonably restricted on the basis of technical qualifications or other such requirements.
- c) **Impartiality and Consensus** — The standards development process shall not be dominated by any single interest category, individual or organization. Consensus based – procedures to take into account views of all parties concerned and to reconcile any conflicting arguments. Impartiality with respect inter alia to access, submission of comments, views, decision making, obtaining information, dissemination, fees, right to transpose, revision.

- d) **Effectiveness and Relevance** — Relevant and respond to regulatory and market needs as well as scientific and technological developments in various countries. Performance based rather than design based or descriptive characteristics.
- e) **Coherence** — Coherence amongst standardizing bodies, avoid conflicting standards, duplication, overlap. Encourages cooperation and coordination with other relevant international bodies.
- f) **Development Dimension** — Recognizes constraints on Micro, Small & Medium Enterprises (MSME) to effectively participate in standards development, find tangible ways to facilitate MSME participation, such as, use of technical assistance and capacity building. Aimed at ensuring that MSME not excluded de facto from the process.

4.3.3 Participation in Standards Development Process

4.3.3.1 Participation in standardization processes at the national level shall be accessible to all interested persons and organizations, through participation in the committees or through conveying comments on draft or established Indian Standards. The procedures being followed shall be in such a way that they shall not hinder the participation of any interested stakeholder in the standards formulation.

4.3.3.2 Committees in the SDO shall be constituted with a gathering of related experts or stakeholders to formulate the standards. The SDO may constitute sub-committees or panels based on the specificity of the formulation to help the sectional committee. There shall be balance of representation of all stakeholders in the committees or panels.

4.3.3.3 With a view to harmonize standards as wide as possible, the SDO shall give priority to playing a full part, within the limits of its resources and scope, in the preparation of standards by international bodies [for example, International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC)] etc, by participation and adoption of the standards through the Bureau.

4.3.3.4 Where an SDO wants to, or is, participating in IEC or ISO activities they shall comply with the appropriate Bureau procedures and necessary directions from Bureau and such procedures include matters relating to, but not limited to:

- a) Membership of ISO or IEC technical committees.
- b) Commenting on and voting on ISO or IEC documents.
- c) Attending international meetings (*see Para 8.4*).

4.3.4 Public Consultation

4.3.4.1 Public consultation is an integral part of standards development and is relevant in ensuring transparency. The draft SDO standards prepared for recognition as Indian Standards shall be made available for public comments.

4.3.5 Handling of Inquiries and Complaints

4.3.5.1 The SDO shall have a formal process to accept and respond to public inquiries regarding the technical content of a published standard related to their scope. This may include interpretations and rulings on the meaning or applicability of the standard.

4.3.5.2 The SDO shall have a procedure for hearing complaints and handling appeals arising out of the Standards development process. Complaints may be either of a substantive (technical) nature or procedural nature.

4.3.5.3 The complaints and appeals procedure shall,

- a) be fair and unbiased;
- b) not impose an undue burden on any party;
- c) provide for the timely hearing of complaints; and
- d) ensure each complaint is fully addressed.

4.3.5.4 Records of each complaint or appeal and the outcome shall be kept.

4.3.5.5 The procedure for hearing and handling of complaints and appeals shall be reviewed regularly and, if appropriate, updated to ensure effectiveness.

4.4 Documentation Requirements

4.4.1 The documents related to the following shall be readily available with the SDO at all times. The standards development records shall be retained for at least ten years from the date of publication of a Standard or two review cycles whichever is the greater.:

- a) Legal Identity of the SDO;
- b) Authentication of premises of the SDO;
- c) Standards Formulation Policy of the SDO;
- d) Organization chart of the SDO;
- e) List of technical and managerial personnel of the SDO with their name, designation, qualification, experience, training details, etc, clearly indicating the personnel engaged in standards formulation;
- f) Roles and responsibilities of the personnel engaged in standards formulation;
- g) Standards formulation procedure which shall state specifically how consensus will be determined. The above shall also include documentation for Committee Management, Meeting Management and Document Management;
- h) The provisions and procedures for handling inquiries, feedbacks, complaints and appeals;
- j) The status of the work (programme of work) of the SDO, which shall be updated instantly and shall be put in the public domain which shall be accessible to all, as and when needed; and
- k) Records management policy that specifies the records to be kept, by whom and for how long.

4.4.2 The SDO shall keep and maintain records of its standards development and management activities in order to demonstrate compliance with the scheme. Records related to the following (physical or electronic) shall be readily available for verification as and when required by the Bureau:

- a) Records of development for each published standard, which shall include, but shall not necessarily be limited to:
 - i) Copy of the Meeting Notice, Agenda and Minutes of the meetings held in the process of standards formulation;
 - ii) Evaluation of New Work Item Proposal and project approval;
 - iii) Working group or committee composition responsible for the formulation of standard (interest groups);
 - iv) Public comments received;
 - v) Consideration of comments and their disposition; and

- vi) Evidence of consensus.
- b) Records of inquiries, feedbacks, complaints and appeals received and their handling and outcome.
- c) Records of dissemination of information about standards formulation, from the taking up a new work item to the publishing of the standard.
- d) Records of evidence of coordination and harmonization efforts carried out to resolve potential conflicts between and among existing Indian Standards and candidate or draft Indian Standards.
- e) Any other record required to demonstrate compliance with all aspects of the scheme and Bureau or developer's accredited procedures.

4.5 The SDO shall give an undertaking to abide by the terms and conditions of the scheme.

5 PROCEDURE FOR RECOGNITION

5.1 Submission of Application

5.1.1 Any SDO fulfilling the criteria as laid down under Para 4 may apply for recognition in the prescribed application form (**Annexure I**) along with the requisite documents and one-time application fee (see Para 7).

5.1.2 The following documents, duly authenticated, shall be submitted along with the application form:

- a) Legal Identity of the SDO – any one or more of the following documents:
 - i) Certificate of Registration by Company Registrar and Memorandum of Articles in case SDO is a Limited Company.
 - ii) Partnership Deed in case SDO is a Partnership entity.
 - iii) For the purposes of legal identity, an SDO shall be a legal entity on the basis of its governmental status.
- b) Authenticating premises of the SDO - any one or more of the following documents clearly indicating and covering all the areas where SDO activities are carried out and which are proposed to be covered under recognition. In case the document(s) of address proof and legal identity is (are) in the local language, then their authenticated English Translation may preferably also be provided:
 - i) Certificates from Registrar of Firms or Directorate of Industries or Industries Centre.
 - ii) Rent Agreement, duly notarised and registered through court.
 - iii) Authentication of the premises of a governmental SDO will be carried out on the basis of its governmental status.
- c) Organization chart of the SDO, clearly indicating the names and designations of various functionaries engaged in standard development.
- d) List of Technical and Managerial personnel of the SDO with their name, designation, qualification, experience, training details, etc, on the prescribed proforma.
- e) Undertaking to abide by the Terms and Conditions of this scheme as given in **6.1** on a continuous basis on the prescribed proforma, to be submitted on SDO's letterhead.
- f) Undertaking with regards to maintenance of a balanced representation of all stakeholders in its committees and consensus in formulation of standards.
- g) Documents as referred in the application form (**Annexure I**) but not covered above.

- h) Documents relating to procedure for establishment, review, maintenance and publicity of standards.
- j) Declaration regarding the physical infrastructure which is required and used in the process of standards development.
- k) Any other document considered relevant by the SDO.

5.1.3 The application form, duly filled-in, shall be signed by its owner or top management, that is, Proprietor, Partner, Director, Chief Executive Officer (CEO) or Head as the case may be or any other person so authorized for the purpose by the management. The name and designation of the person signing the application shall be recorded legibly in the space for the purpose in the application form. In case the application is signed by authorized signatory, a certificate from the top management of the SDO on its official letterhead, bearing the seal of the SDO and clearly attesting the signature of the authorized signatory, shall also be required to be submitted, in original, along with the application.

5.2 Initial Scrutiny of Application

Applications submitted by the SDO shall be initially scrutinized by the Bureau for its completeness with respect to. antecedents, availability of the documents and prescribed application fee. The one-time application fee is non-refundable. Depending upon the outcome of the scrutiny, the following actions could be taken:

- a) Application found incomplete with respect to the requisite fee or the required documents mentioned shall be returned to the SDO without registration, if any, with the advice for re-submission of the application complete in all respect.
- b) Application found complete with respect to. the required documents and the requisite fee would be recorded for further processing.
- c) If so desired by the Board in Bureau, a special verification visit may be carried out by the Bureau to ensure that the various criteria for recognition as given under Para 4 are met by the SDO. The SDO shall be required to arrange for travel and stay for the auditors or experts, as per their entitlement.

5.3 Rejection of Application

5.3.1 Application for recognition shall be liable for rejection, if the SDO:

- a) does not pay the one-time application fee;
- b) does not take corrective action(s) on deficiencies observed during evaluation of documents within 30 days;
- c) is found to have made any false declaration in the application form; and
- d) violates provisions of WTO-TBT Code of Good Practice for the Preparation, Adoption and Application of Standards.

5.3.2 A notice for rejection of application stating the reason(s) thereof, will be served to the applicant, giving 30 days' time to respond, that is, for submitting the required clarification or corrective action or re-submission of the documents or for providing justification for the delay. While issuing notice for rejection, the SDO would be provided with an opportunity for requesting for personal hearing.

5.3.3 In case no reply is received within the stipulated time, to the notice of rejection or no request is received for a personal hearing, then the application shall be rejected and a decision conveyed to the SDO.

5.3.4 If reply given by the SDO to the notice or the justifications submitted during the personal hearing is found unsatisfactory or unacceptable, the application shall be rejected.

5.4 Decision on Recognition

On the basis of the verification of closure of all non-conformities observed, if any, and confirmation on record that criteria for recognition is met and the SDO has submitted the undertaking to abide by the Terms and Conditions of this scheme, the application shall be processed for grant of recognition through the following:

- a) Finalizing the scope, in terms of field of expertise or the SDO's interest, for which recognition is granted.
- b) Recognition shall be for a period of three years.
- c) Recognition shall be effective from the date of signing of agreement between the Bureau and the SDO (**Annexure II**).
- d) A unique Recognition No. shall be allotted to each recognized SDO with a certificate of recognition.
- e) The decision of grant of recognition shall be communicated to SDO.

6 OPERATION OF THE SCHEME

6.1 Terms and Conditions

Every SDO recognized by Bureau shall abide by the following terms and conditions:

- a) The SDO shall ensure that infrastructure and manpower as required are met and maintained on a continuous basis.
- b) The SDO shall inform the Bureau as and when it plans for shifting of its SDO premises to an address other than that declared and verified at the stage of grant of recognition.
- c) The SDO shall facilitate and permit access to the Bureau for all verification (see Para 6.2) and investigations which Bureau may carry out to the SDO, if so desired by the Board, and provide the required information as sought.
- d) The SDO shall give minimum 30 days' notice while surrendering recognition and shall comply with the instructions given by the Bureau.
- e) Upon withdrawal of recognition or expiry of the recognition, the SDO shall discontinue claiming Bureau recognition and withdraw all publicity material (both in print and electronic media) which may contain reference thereto.
- f) The SDO shall submit a statement of new subjects taken up and the status of all the standards under development for the Bureau in the prescribed format once a quarter year (starting from April) as per the instructions provided by the Bureau.
- g) The SDO would be required to work through available Bureau portal as per the instructions provided by the Bureau for taking up new subjects for the formulation and for submitting the finalized draft standards to the Bureau.
- h) The SDO will also maintain balanced representation of all stakeholders in its committees and consensus in formulation of standards.
- j) Neither members of management of the SDO nor any employee of the SDO shall, in any way, act as authorized Indian representative for any international activity of standards formulation without the approval of the Bureau.

- k) The recognized SDO shall send a copy of the Meeting Notice, Agenda and Minutes of the meetings being held in the process of standards formulation to the Bureau.
- m) The SDOs recognized for the formulation of standards shall adhere to scheme or specific guidelines issued by the Bureau from time to time.
- n) The SDO should participate in the Bureau's concerned technical committees, whenever so desired by the Bureau.
- p) Copyright for such standards developed by SDO and recognised as Indian Standards shall remain with both SDO and the Bureau.
- q) The recognised SDO shall indemnify and keep indemnified the Bureau against all losses and claims for injuries or damages to any person or any property whatsoever which may arise out of or in consequence of the Agreement and against all claims, demands, proceedings, damages, costs, charges and expenses whatsoever in respect of or in relation thereto under the provisions of various laws as amended from time to time.
- r) The SDO shall indemnify, protect and save the Bureau against all claims, losses, costs, damages, expenses, action suits and other proceedings, resulting from infringement of any patent, trademarks, copyrights, etc or such other statutory infringements.
- s) The SDO shall agree to the terms and condition for revenue sharing as given in Para 9, and submit a report on the sale of recognized standard in every six month.

6.2 Special Verification Visit

As and when found necessary by the Board, the Bureau as per the direction of the Board may carry out a special verification visit to ensure that the various criteria for recognition as given under Para 4 and conditions as given in Para 6.1 are met by the SDO. The SDO shall be required to arrange for travel and stay for the auditors or experts, as per their entitlement.

6.3 Renewal of Recognition

6.3.1 The recognition of SDO shall be valid for three years from the date of signing of agreement between the Bureau and the SDO. The renewal shall cease to be valid on expiry of the recognition period unless renewed as per Para 6.3.2 and Para 6.3.3.

6.3.2 The recognition may be renewed by the Bureau keeping in view the requirement of the Bureau and the past performance of the SDO.

6.3.3 For renewal of recognition, the SDO shall apply to Bureau on the application form as prescribed in **Annexure III** at least three months before expiry of validity date of the recognition along with requisite fee as prescribed in Para 7 and related documents. Renewal application fee is non-refundable.

6.3.4 If renewal of recognition is pending with the Bureau due to any reason which cannot be assigned to the SDO, though renewal application along with renewal fee have been received before the validity date of recognition, the SDO shall be allowed to function as a recognized SDO till a decision on the renewal application is taken by the Bureau.

6.3.5 Renewal of recognition shall be for a period of three years.

6.4 Deferment or Expiry of Renewal

6.4.1 Renewal of recognition may be deferred for a maximum period of six months due to any of the following reasons:

- a) Non-receipt of the renewal application or fee;
- b) Any complaint against the SDO is under investigation or decision on some related issues is pending at the end of the validity period; or
- c) If the renewal process is delayed due to non-compliance by the SDO to the requirements necessary to process the renewal.

6.4.2 The SDO will be intimated about its recognition being put under deferment due to any of the above reasons as applicable. In case the SDO does not take corrective action during the period of deferment, a deferment-cum-expiry notice (14 days prior to the last date of deferment period) with the option of a personal hearing will be sent to the SDO giving 14 days' time to reply. If no reply is received within the stipulated period or reply is found unsatisfactory, or if the plea(s) extended at the time of personal hearing are not acceptable to the Bureau, the recognition shall be allowed to expire.

6.4.3 If renewal is not sought by the SDO along with requisite fee before the validity period is over, a deferment-cum-expiry notice (14 days prior to the last date of deferment period) with the option of a personal hearing will be sent to the SDO giving 14 days' time to reply. If no reply is received within the stipulated period or reply is found unsatisfactory, or if the plea(s) extended at the time of personal hearing are not acceptable to the Bureau, the recognition shall be allowed to expire.

6.4.4 In case an SDO is not willing for renewal of recognition, it shall submit the drafts for the subjects which the Bureau had requested the SDO to formulate a standard to the Bureau.

6.4.5 The period of deferment of renewal may be extended beyond six months in an exceptional situation with the approval of the Board in the Bureau.

6.4.6 The renewal of deferred recognition may be considered on satisfactory compliance of the requirement for which renewal was deferred.

6.5 Extension or Reduction of the Scope of Recognition

6.5.1 Extension of Scope of Recognition shall be dealt as follow:

- a) The SDO shall make formal request for extension of scope along with documentary evidence and declaration of availability of resources and competence for the additional field and undertaking as prescribed in **Annexure IV**.
- b) On satisfactory assessment of the documents, the extension of scope for the additional field may be permitted based on adequacy audit at the Bureau.

6.5.2 Reduction in scope of recognition may be carried out for any of the following reasons:

- a) The SDO is assessed by the Board to be incompetent for any area within the scope.
- b) The SDO requests for deletion of any area from the scope.

6.6 Change in Management or Structure of SDO

During the operation of recognition, a number of special situations arise on account of changes in the management or structure of the SDO. The situations may be of the following type:

- a) Change in address of the SDO premises;
- b) Change in the name of SDO without change of ownership and management;
- c) Change in the ownership of the SDO, with or without a change in the name;
- d) Division of the SDO into two or more units with one of them retaining the original name;
- e) Division of the SDO into two or more units none retaining the original name;
- f) Merging of two or more SDOs into one entity with a change in name or retaining one of the original names; or
- g) Lockout, winding up, liquidation, dissolution, and closure, etc, of the SDO.

6.6.1 In case of Para **6.6 (a)**, the SDO is required to intimate the Bureau in advance about shifting of the SDO and stop the formulation process at the old premises. On receipt of this information, the recognition will be suspended by the Bureau. On completion of shifting the SDO will intimate this fact to the Bureau along with any legal document authenticating the new premises as per Para **5.1.2 (b)**.

6.6.2 In case of Para **6.6 (b)**, any of the legal documents as specified in Para **5.1.2 (a)** shall be resubmitted along with a fresh undertaking as given in **Annexure I** in the new name of the SDO.

6.6.3 In case of Para **6.6 (c)**, any of the legal documents as specified in Para **5.1.2 (a)** shall be resubmitted, along with a fresh undertaking as given in **Annexure I** by the new owner or management.

6.6.4 In case of Para **6.6 (e)**, the units will be treated as new entities and they may apply for recognition afresh.

6.6.5 In case of Para **6.6 (f)** with or without change of name, the recognition of the SDO shall stand withdrawn. The merged entity shall be treated as a new entity and it may apply for recognition afresh.

6.6.6 In case of Para **6.6 (g)**, the SDO will inform any such situation with exact status of its functioning to the Bureau immediately. On receipt of information, Bureau will decide suspension or withdrawal of recognition of the SDO depending upon the situation. In case of winding up, liquidation, etc, full details regarding the authorized owner of the company or the liquidator shall be provided by the SDO to enable the Bureau for further action required, if any.

6.7 Complaint or Feedback against the SDOs

Any complaint or feedback received against a SDO from any source will be examined or investigated by Bureau and action as deemed fit, which may include non-renewal or suspension or withdrawal of recognition, will be taken by the Bureau.

6.8 Suspension or Withdrawal of Recognition

The recognition of the SDO may be withdrawn any time during the recognition period by the Bureau for any of the following reasons:

- a) If the SDO surrenders recognition;
- b) If the SDO fails in any respects to comply with the law of the land.

- c) If the SDO does not maintain adequate transparency and consensus pertaining to the formulation of standards;
- d) If the SDO acts or works directly or indirectly against the interest of the Bureau in any form or in any manner;
- e) If the SDO is found indulging in unethical practices such as SDO tries to influence the Bureau through unethical means for procuring more business.
- f) In case, at any point of time, it is established that any of employee engaged by the SDO has indulged in any practice which is not ethical, or has behaved in a manner uncalled for, the Bureau shall direct the SDO to discontinue the use of the services of such employee for the scheme. In case, such or similar incidence is repeated, the Bureau shall have the right to terminate the agreement with the SDO after giving fifteen days' notice.
- g) If the SDO fails to comply with the conditions specified in the Scheme.
- h) If the SDO after the imposition of suspension does not take corrective actions by the stipulated period or the corrective actions taken are found not satisfactory.
- j) If SDO, being a company, enters into liquidation, whether compulsory or voluntary (but not necessarily including liquidation for the purposes of reconstruction), or has a receiver for its business appointed.
- k) For situations leading to suspension or withdrawal of recognition due to change in management or structure of SDO, refer to Para **6.6.1**, Para **6.6.3**, Para **6.6.5** and Para **6.6.6**.

For the reasons mentioned above, the recognition of the SDO shall be suspended with immediate effect (if not already under suspension). Process for Withdrawal of recognition will be initiated by issuing a notice for Withdrawal of recognition to the SDO with the provision of personal hearing to explain as to why such proposed action may not be taken against the SDO. If no reply is received within 14 days or if the reply is found unsatisfactory or if the plea(s) extended at the time of personal hearing are not acceptable to the Bureau, the recognition of the SDO shall be withdrawn.

7 FEE STRUCTURE

7.1 The schedule of fees for the scheme is given in **Annexure V** of this scheme.

8 PROCEDURE FOR RECOGNITION OF STANDARDS OF RECOGNISED SDOs AS INDIAN STANDARDS

8.1 Procedure for Recognition

SDO shall have choice of which of their formulated standards are to be recognised as Indian National Standard. SDO shall send a request to the Bureau to recognise their standard as National Standard, where the concerned Technical Department in the Bureau shall review or evaluate the standard with respect to,

- i) The procedure followed in development of the standards requested for recognition as Indian Standards, which shall be in line with Para **4.3.2.1**; and
- ii) Adherence to the eligibility conditions (see Para **8.2**) to recognize as an Indian Standard.

8.2 Evaluation of the SDO Standard by the Bureau

8.2.1 The concerned Technical Department in the Bureau shall evaluate the SDO Standard with respect to the following:

- a) procedures followed in development of the standard which shall be as given in Para 4.3.2,
- b) relevance to the industry to recognize as an Indian Standard,
- c) the standard shall be prepared as per IS 12 " and the International Classification for Standards (ICS) shall be followed,
- d) cross-references to other standards or publications mentioned in the standard (see Para 8.2.2),
- e) technical structure including flow of provisions in the standard, and
- f) Submission of documents or declaration by the SDO as given at Para 8.2.3.

8.2.2 There shall be no reference to any international standard (except ISO or IEC standards) in the standard proposed by the SDO for recognition as Indian Standard. There shall be reference to only Indian Standards and SDO Standards recognized as Indian standards.

8.2.3 The SDO shall submit the following documents or declaration to the Bureau for verification:

- a) Composition of the technical committee responsible for the formulation of the standard;
- b) Date of various stages of formulation of the standard, particularly date and period of internal circulation within the committee and those of public consultation;
- c) Agenda and Minutes of the meetings of the concerned technical committee for the formulation of the standard; and
- d) Declaration that the standard formulated by them does not contain any proprietary or patented item.

8.3 Recognition as IS/SDO Standard

Once the concerned Technical Department in Bureau verifies that the requirements as given in Para 8.1 and Para 8.2 are complied with, the consent of the concerned Technical Committee of Bureau for formulating an Indian Standard on the subject shall be obtained. Subsequent to the approval of the Technical Committee, the SDO standard shall be hosted on website of the Bureau for public review for a minimum period of one month. Any comment received on the SDO Standard because of public review shall be resolved by the SDO through their concerned technical committee. The concerned technical committee of the SDO shall consider all the written views and objections received on the SDO standard and the agenda and minutes of the meetings in which the comments received on the SDO Standard were considered shall be provided to the Bureau along with the draft SDO standard incorporating any changes that may be required as a result of the public review. The final draft SDO Standard so received from the SDO shall be processed for the adoption by the concerned Division Council of the Bureau. The draft Indian SDO Standard so adopted by the Division Council shall be published and gazetted as **IS/SDO XXXX : Year.**

8.4 Participation of Recognised SDO in the International Meetings (ISO or IEC meetings)

8.4.1 The decision regarding participation of the SDO in the international meetings (ISO or IEC meetings) related to the recognised scope of the SDO shall be decided by the concerned technical committee of the Bureau dealing with the subject of scope of recognized SDO. The SDO shall send their interest with proper justification to attend or participate in the international meetings to the sectional committee of the Bureau

through the technical committee or expert of SDO represented on the concerned sectional committee [National Mirror Committee (NMC)] of the Bureau. The NMC shall scrutinize their proposal and decide regarding giving approval for attending the meeting.

8.4.2 All the expenses for attending the international meetings shall be borne by the SDO themselves.

8.5 Comments on Published Indian Standards

8.5.1 Comments or Feedback on published Indian Standards, beyond the scope of recognition of SDO shall be referred to the Bureau. The commentator shall be notified about the same.

8.5.2 Comments or Feedback on published IS/SDO Standard, under the scope of recognition of SDO shall be handled by the established committee structure in the SDO. The commentator shall be notified about the outcome.

8.6 RTI, CPGRAMS, Parliament Questions, Legal Matters

The SDO shall take the responsibility of queries received on the recognized SDO standards through RTI, CPGRAMS, Parliament Questions, legal matters, etc. Such queries shall be forwarded to the concerned SDO for further necessary action in the matter by them. The SDO shall keep the Bureau updated regarding the above from time to time.

9 SALE OF SDO STANDARDS RECOGNISED AS INDIAN STANDARDS

9.1 The revenue sharing in the revenue generated through sale of SDO standards recognized as Indian Standards shall be in the ratio as given below:

SI No.	Type of Standard	Percentage of Sharing Bureau:SDO
1	Indigenous Standard	30:70
2	Modified International Standard (ISO or IEC)	70:30
3	Identical International Standard (ISO or IEC)	100 % by Bureau

9.2 The recognized SDO shall submit a report on the sale of recognized standard and revenue generated therefrom in every six-month based on which a combined report on the revenue generated from the sale of recognized standard by the Bureau and the SDO shall be prepared for calculation regarding revenue sharing.

10 APPEAL

10.1 SDO aggrieved by the order of the Bureau regarding rejection of application, expiry or withdrawal of recognition may file an appeal to the Director General of the Bureau within a period of 30 days from the date of the order.

10.2 SDO aggrieved by the order of the Bureau regarding non-recognition of their standard as Indian Standard or matters related thereto may file an appeal to Deputy Director General (Standardization) of the Bureau within a period of 30 days from the date of the order.

11 GENERAL

11.1 Any situation not covered under this Scheme, will be considered by the Bureau and decision of Bureau shall be final.

ANNEXURE I

Application for Recognition

The purpose of this document is to outline the structure and operation of the SDO's activities for review by the Board with the aim of becoming formally approved as a Bureau recognised Standards Developing Organisation.

1 ORGANISATION DETAILS

1.1 Name¹

1.2 Address

1.3 Contact details

Name:

Phone:

Mobile:

e-mail:

Website:

1.4 Registration Number and GSTIN Number

1.5 Date of Application

1.6 Signature of applicant

Name:

Position:

2 ABOUT THE ORGANISATION

Documents explaining the organisation, its aims and operations may be appended to provide the necessary information (e.g. Annual Reports). Reference to a web site is also acceptable.

2.1 Overview²

2.2 Objectives of the Organisation

2.3 Mission and Vision

2.4 Fields of Activity

2.5 Organisational Structure

¹ These are table cells, just keep typing and they will expand to fit the text.

² These are table cells, just keep typing and they will expand to fit the text.

- 2.6 Governance**
- 2.7 Key Stakeholders**
- 2.8 Individuals or groups represented by the organisation**
- 3 REASON FOR SEEKING RECOGNITION**
- 4 SCOPE OF RECOGNITION SOUGHT**
- 5 STANDARDS DEVELOPMENT ACTIVITIES**
 - 5.1 Background and history**
 - 5.2 Stakeholder engagement**
 - 5.3 Overview of standards development process**
 - 5.4 Work Program**
- 6 DOCUMENTS ATTACHED**

ANNEXURE II
Agreement between Bureau and Recognized SDO

(To be executed on a stamp paper of Rs. 100/-)

1. This agreement is made as of _____ (date) _____ between the Bureau of Indian Standards, having its principal office at 9, Bahadur Shah Zafar Marg, New Delhi, India, hereinafter referred to as Bureau, which expression shall include its successor and assignees and the Recognized Standard Developing Organization (SDO) _____ (Name of the SDO) having its principal office at _____ (address) hereinafter referred to as SDO, which expression shall include its successors and assignees.
2. Whereas, Bureau is authorized under Section 10(2)(c) of the Bureau of Indian Standards Act, 2016 and Section 30 of the Bureau of Indian Standards Rules, 2018 to recognise or accredit any institution in India or outside which is engaged in standardisation. Accordingly, Bureau has prepared the Scheme for Recognition of Standard Developing Organizations (SDOs) for recognition of SDOs possessing the requisite technical expertise and infrastructure to carry out Standard Formulation under the Scheme, on behalf of the Bureau.
3. Whereas, SDOs are recognized by the Bureau based on the Bureau's Recognition Criteria as amended from time to time and other applicable documents.
4. Whereas the SDO, in response to the above Scheme, has expressed its interest, confirming possession of the requisite infrastructure, competence and proven expertise in standardization activities. Bureau, considering the facts submitted by the SDO, has agreed to engage the SDO to undertake Standard Formulation in the fields of standardization provided in the scope of recognition, on behalf of the Bureau, as per its Scheme for Recognition of Standard Developing Organizations (SDOs).
5. This Agreement sets out the relationship between Bureau and the recognized SDO and the terms and conditions to be met by the SDO in the operation of the Scheme.
6. Both Bureau and the recognised SDO hereto agree to abide the under mentioned terms and conditions.
7. *Validity Period of Agreement and Renewal*
 - i. This Agreement shall be valid for three years from the date of signing of agreement between the Bureau and the SDO. This agreement will cease to be valid on expiry of the recognition period unless renewed as per **3** of this agreement.
 - ii. The SDO shall pay such fees for application and renewal as notified by Bureau from time to time.

- iii. This agreement may be renewed keeping in view the requirement of Bureau and the past performance of the SDO. The SDO shall submit application for renewal of recognition three months before the date of expiry of recognition along with the requisite fees. A fresh agreement with proper authentication and signed by the CEO of the SDO shall be submitted along with the application for renewal.

8. *Requirements of Recognition*

The SDO shall abide by all the requirements prescribed in the Bureau's Scheme for Recognition of SDOs including the terms and conditions stipulated therein.

9. *Rights of Bureau in operation of the scheme*

Bureau shall have full rights to verify whether the requirements for recognition are met by the SDO and the SDO shall provide all reasonable facilities for carrying out the necessary verification. *The SDO* shall give full details of actions taken in response to non-conformities or complaints and allow access to all relevant records and documents for the purpose of any investigations and provide certified copies thereof.

10. Bureau shall have full rights to witness and supervise the activities of the SDO, assess the reports and to reject any report or draft Indian Standard, as submitted by the SDO.
11. The SDO shall have no objection regarding Bureau seeking feedback about the performance of the SDO and its activities.
12. The SDO shall extend full cooperation to the Bureau in matters of investigation concerning recognition and complaints received.

13. *Termination*

These arrangements shall continue in force unless and until terminated:

- i. By either party upon 90 (ninety) days written notice to the other;
 - ii. Immediately, by decision of the Bureau in accordance with Bureau's procedures as formally notified in advance of such a decision to the SDO.
14. If the SDO fails to comply with the terms of this Agreement, or any undertakings given to Bureau, the relevant recognition criteria, Bureau may withdraw recognition, reduce the scope of recognition or impose other sanctions as appropriate.
 15. SDO wishing to relinquish its recognition shall give at least 90 (ninety) days written notice to Bureau of its intent and the return of the letter of recognition.
 16. Additionally, Bureau reserves the right to withdraw the recognition of the SDO:
 - i. If SDO, being a company, enters into liquidation, whether compulsory or voluntary (but not necessarily including liquidation for the purposes of reconstruction), or has a receiver for its business appointed; change in address of the SDO premises; division of the SDO into two or more units

with one of them retaining the original name; merging of two or more SDOs into one entity with a change in name or retaining one of the original names; or lockout, winding up, liquidation, dissolution, and closure etc. of the SDO; or

- ii. If the SDO fails in any respects to comply with the law of the land, or
 - iii. If the SDO fails to comply with the conditions specified in the Scheme, or
 - iv. If the SDO does not maintain adequate transparency and consensus pertaining to the formulation of standards, or
 - v. If the SDO acts and works directly or indirectly against the interest of the Bureau in any form or in any manner, or
 - vi. If the SDO is found indulging in unethical practices such as SDO tries to influence the Bureau through unethical means for procuring more business, or
 - vii. If the SDO after the imposition of suspension does not take corrective actions by the stipulated period or the corrective actions taken are not found satisfactory.
17. Copyright for such standards developed by SDO and recognised as Indian Standards shall remain with both SDO and the Bureau.
18. The recognised SDO shall indemnify and keep indemnified the Bureau against all losses and claims for injuries or damages to any person or any property whatsoever which may arise out of or in consequence of the Agreement and against all claims, demands, proceedings, damages, costs, charges and expenses whatsoever in respect of or in relation thereto under the provisions of various laws as amended from time to time.
19. The SDO shall indemnify, protect and save the Bureau against all claims, losses, costs, damages, expenses, action suits and other proceedings, resulting from infringement of any patent, trademarks, copyrights, etc or such other statutory infringements.
20. In case, at any point of time, it is established that any of employee engaged by the SDO has indulged in any practice which is not ethical, or has behaved in a manner uncalled for, Bureau shall direct the SDO to discontinue the use of the services of such employee for the scheme. In case such or similar incidence is repeated, Bureau shall have the right to terminate the agreement with the SDO after giving fifteen days' notice.
21. Upon withdrawal of recognition, however determined, the SDO shall discontinue forthwith its use of any reference to recognition, withdraw all publicity matter (both print and electronic) which contains any reference thereto, return the letter of recognition, and topics and drafts under preparation to Bureau.
22. At the date of termination Bureau's Recognition of the SDO shall immediately cease to be valid.

23. Appeals

- i. Appeals can be made by the SDO only against rejection of application or expiry or withdrawal of recognition. Such a decision by Bureau shall stand pending hearing of appeal, if any.
- ii. All disputes, differences or questions at any time arising between the parties as to the construction of this agreement or as to any matter or thing arising out of this Agreement or in any way connected therewith (which cannot be settled by mutual agreement) shall be referred to the arbitration of the Director General, Bureau of Indian Standards or to any other person to be nominated by Director General, Bureau of Indian Standards. The arbitration shall be held in the City of Delhi and shall be in accordance with the Arbitration and Conciliation Act, 1996.

24. *Indemnity* — The SDO undertakes to indemnify the Bureau against any losses suffered by or claims made against Bureau as a result of misuse by the SDO of the recognition granted by the Bureau as a result of any breach by the SDO of the terms of this Agreement.

25. *Dispute Resolution* – In case of any dispute that cannot be resolved amicably, the same shall be referred to the sole Arbitrator appointed by Director General, Bureau of Indian Standards, whose decision shall be final and binding upon both the Bureau as well as recognized SDO. The provisions of the Arbitration and Conciliation Act, 1996, as amended from time to time, shall be applicable”.

26. *Jurisdiction* – The Hon’ble Courts at Delhi alone shall have the jurisdiction to try and decide the suit arising out of this agreement.

27. *Applicable Law* – The agreement shall be governed and interpreted under Indian Laws.

THE PARTIES TO THE AGREEMENT

<p><i>For the recognized SDO</i> (Name of the SDO)..... Address:..... Signed: Name:..... (BLOCK CAPITALS)</p>	<p><i>For Bureau of Indian Standards</i> Address Manak Bhavan 9 Bahadur Shah Zafar Marg New Delhi - 110 002 Signed: Name:..... (BLOCK CAPITALS)</p>
<p>Position:</p> <p>Date:.....</p> <p>Witness 1:</p>	<p>Position:</p> <p>Date:</p> <p>Witness 2:</p>

Signed:

Name:.....

(BLOCK CAPITALS)

Address:

.....

.....

Date:.....

Signed:

Name:.....

(BLOCK CAPITALS)

Address:

.....

.....

Date:.....

ANNEXURE III
Application form for renewal of recognition

The purpose of this document is to outline the structure and operation of the SDO's activities for review by the Board with the aim of becoming formally recognize as a Standards Development Organisation.

1 ORGANISATION DETAILS

1.1 Name³

1.2 Address

1.3 Contact details

Name:

Phone:

Mobile:

e-mail:

Website:

1.4 Registration Number and GSTIN Number

1.5 Date of Application

1.6 Signature of applicant

Name:

Position:

1.7 SDO Recognition No.

2 ABOUT THE ORGANISATION (IF THERE IS ANY CHANGE SINCE RECOGNITION OR LAST RENEWAL)

Documents explaining the organisation, its aims and operations may be appended to provide the necessary information (e.g. Annual Reports). Reference to a web site is also acceptable.

2.1 Overview⁴

2.2 Objectives of the organisation

2.3 Mission and Vision

³ These are table cells, just keep typing and they will expand to fit the text.

⁴ These are table cells, just keep typing and they will expand to fit the text.

- 2.4 Fields of activity**
- 2.5 Organisational structure**
- 2.6 Governance**
- 2.7 Key Stakeholders**
- 2.8 Individuals or groups represented by the organisation**
- 3 REASON FOR SEEKING RECOGNITION (IF THERE IS ANY CHANGE SINCE RECOGNITION OR LAST RENEWAL)**
- 4 SCOPE OF RECOGNITION SOUGHT (IF THERE IS ANY CHANGE SINCE RECOGNITION OR LAST RENEWAL)**
- 5 STANDARDS DEVELOPMENT ACTIVITIES (IF THERE IS ANY CHANGE SINCE RECOGNITION OR LAST RENEWAL)**
 - 5.1 Background and history**
 - 5.2 Stakeholder engagement**
 - 5.3 Overview of standards development process**
 - 5.4 Work Program**
- 6 DOCUMENTS ATTACHED (IF THERE IS ANY CHANGE SINCE RECOGNITION OR LAST RENEWAL)**

ANNEXURE IV
Undertaking for Extension of Scope of Recognition

We, M/s _____
located at _____

_____, are
applying for extension of scope of recognition under the Bureau's Scheme for
Recognition of SDOs to the new field of _____

_____. I or

We undertake that :

(a) The SDO has availability of resources and competence for the additional field and documentary evidence of the same is attached.

(c) I or We understand that extension may be granted on adequacy audit basis in Bureau.

Signature

Name

**Designation (Owner or Partner or Director of the
SDO or Authorized Signatory*)**

Seal

Date

Place

* In case of authorized signatory, a letter from Owner or Director or Partner of the SDO certifying the signature of authorized signatory to be submitted with the application.

ANNEXURE V
a) Fee Structure of the Scheme

Sl. No.	Item	c) d) e) Fees or Charges (Rs.)
1	One time application fee for recognition	1000
2	Application fee for renewal of recognition ^{b)}	1000

- a) Schedule of fees and charges are subject to revision from time to time.
- b) Fee for Renewal shall be payable along with the application for renewal of recognition
- c) Plus taxes, as applicable and revised as per the guidelines of Ministry of Finance.
- d) The amount indicated above are excluding bank commissions and transfer charges. The SDO shall ensure that bank commission or transfer charges, if any, are deposited in addition to the above-mentioned amount so that the above mentioned net fee or charges (in INR) are credited to the Account of the Bureau.
- e) The payment may be deposited with Bureau through RTGS or NEFT or SWIFT transfer. Our Bank account details are as follows:

Name of the Bank: Syndicate Bank
Address of the Bank: BIS Branch, Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi
Bureau's Account No.: 90842180024625
IFSC Code: SYNB0009084 (For transfer in INR)

Annex 6

EFFICIENCY INDEX

An Advanced Dashboard is developed to give deeper insights of standard formulation related activities, also an Efficiency Index is published for comparative assessment of various Sectional Committees which is based on 6 KPIs currently. The details of various KPIs and the logic used for calculating the efficiency index is as following:

KPI 1. % of Meetings Held

For calculating this KPI number of TC meetings planned and number of TC meetings held (meetings for which attendance is recorded) are used.

KPI 2. Meetings Attendance %

Average number of attendance in various meetings of a TC is used as KPI here.

KPI 3. Published Standards - Timeframe %

Categorization of standards is as following:

a = No. of Standards Published in 0 to ≤ 6 months

b = No. of Standards Published in > 6 to ≤ 9 months

c = No. of Standards Published in > 9 to ≤ 12 months

d = No. of Standards Published in > 12 to ≤ 18 months

e = No. of Standards Published in > 18 to ≤ 24 months

f = No. of Standards Published in > 24 months

g = Total no. of Standards Published

Marks given are as following

Category a = 100

Category b = 90

Category c = 80

Category d = 60

Category e = 40

Category f = 0

Formula used for calculating this is as following: $\frac{((a*100) + (b*90) + (c*80) + (d*60) + (e*40) + (f*0))}{g}$

KPI 4. Reviews Completed %

For calculating this KPI number of standards reviewed against the number of standards planned for review (as per annual action plan) are used.

KPI 5. Inactive Members

Removed % Number of inactive TC members (who have not attended two consecutive meetings) removed against the total number of inactive members currently present in the TC.

KPI 6. Comments on P-drafts %

Comments received from how many TC members against total number of TC members is used for calculating this. More than one comment received from a TC member is treated as one comment.

Final score is calculated by adding marks received in each KPI divided by 600 (total maximum marks).

FOR BIS USE ONLY

Annex 7

(IEC TC 09 – Program of work)

TC9 publications generated on 2024-04-29		
SI. No.	Reference	Title
1	IEC 60077-1:2017	Railway applications - Electric equipment for rolling stock - Part 1: General service conditions and general rules
2	IEC 60077-2:2017	Railway applications - Electric equipment for rolling stock - Part 2: Electrotechnical components - General rules
3	IEC 60077-3:2019	Railway applications - Electric equipment for rolling stock - Part 3: Electrotechnical components - Rules for DC circuit-breakers
4	IEC 60077-4:2019	Railway applications - Electric equipment for rolling stock - Part 4: Electrotechnical components - Rules for AC circuit-breakers
5	IEC 60077-5:2019	Railway applications - Electric equipment for rolling stock - Part 5: Electrotechnical components - Rules for HV fuses
6	IEC 60310:2016/COR1:2018	Railway applications - Traction transformers and inductors on board rolling stock
7	IEC 60322:2001	Railway applications - Electric equipment for rolling stock - Rules for power resistors of open construction
8	IEC 60349-1:2010	Electric traction - Rotating electrical machines for rail and road vehicles - Part 1: Machines other than electronic converter-fed alternating current motors
9	IEC 60349-2:2010	Electric traction - Rotating electrical machines for rail and road vehicles - Part 2: Electronic converter-fed alternating current motors
10	IEC TS 60349-3:2010	Electric traction - Rotating electrical machines for rail and road vehicles - Part 3: Determination of the total losses of converter-fed alternating current motors by summation of the component losses
11	IEC 60349-4:2012	Electric traction - Rotating electrical machines for rail and road vehicles - Part 4: Permanent magnet synchronous electrical machines connected to an electronic converter
12	IEC 60494-1:2013	Railway applications - Rolling stock - Pantographs - Characteristics and tests - Part 1: Pantographs for main line vehicles
13	IEC 60494-2:2013	Railway applications - Rolling stock - Pantographs - Characteristics and tests - Part 2: Pantographs for metros and light rail vehicles
14	IEC 60571:2012	Railway applications - Electronic equipment used on rolling stock
15	IEC TR 60638:1979	Criteria for assessing and coding of the commutation of rotating electrical machines for traction
16	IEC 60850:2014	Railway applications - Supply voltages of traction systems

17	IEC 60913:2024	Railway applications - Fixed installations - Electric traction overhead contact lines systems
18	IEC 61133:2016	Railway applications - Rolling stock - Testing of rolling stock on completion of construction and before entry into service
19	IEC 61287-1:2014	Railway applications - Power converters installed on board rolling stock - Part 1: Characteristics and test methods
20	IEC TS 61287-2:2001	Power convertors installed on board railway rolling stock - Part 2: Additional technical information
21	IEC 61373:2010/COR1:2011	Railway applications - Rolling stock equipment - Shock and vibration tests
22	IEC 61375-1:2012	Electronic railway equipment - Train communication network (TCN) - Part 1: General architecture
23	IEC 61375-2-1:2012	Electronic railway equipment - Train communication network (TCN) - Part 2-1: Wire Train Bus (WTB)
24	IEC 61375-2-2:2012	Electronic railway equipment - Train communication network (TCN) - Part 2-2: Wire Train Bus conformance testing
25	IEC 61375-2-3:2015/COR2:2016	Electronic railway equipment - Train communication network (TCN) - Part 2-3: TCN communication profile
26	IEC TS 61375-2-4:2017	Electronic railway equipment - Train communication network (TCN) - Part 2-4: TCN application profile
27	IEC 61375-2-5:2014	Electronic railway equipment - Train communication network (TCN) - Part 2-5: Ethernet train backbone
28	IEC 61375-2-6:2018	Electronic railway equipment - Train communication network (TCN) - Part 2-6: On-board to ground communication
29	IEC TR 61375-2-7:2014	Electronic railway equipment - Train communication network (TCN) - Part 2-7: Wireless Train Backbone (WLTB)
30	IEC 61375-2-8:2021	Electronic railway equipment - Train communication network (TCN) - Part 2-8: TCN conformance test
31	IEC 61375-3-1:2012	Electronic railway equipment - Train communication network (TCN) - Part 3-1: Multifunction Vehicle Bus (MVB)
32	IEC 61375-3-2:2012	Electronic railway equipment - Train communication network (TCN) - Part 3-2: MVB (Multifunction Vehicle Bus) conformance testing
33	IEC 61375-3-3:2012	Electronic railway equipment - Train communication network (TCN) - Part 3-3: Can open Consist Network (CCN)
34	IEC 61375-3-4:2014	Electronic railway equipment - Train communication network (TCN) - Part 3-4: Ethernet Consist Network (ECN)
35	IEC 61377:2016	Railway applications - Rolling stock - Combined test method for traction systems
36	IEC 61881-1:2010	Railway applications - Rolling stock equipment - Capacitors for power electronics - Part 1: Paper/plastic film capacitors

37	IEC 61881-2:2012	Railway applications - Rolling stock equipment - Capacitors for power electronics - Part 2: Aluminium electrolytic capacitors with non-solid electrolyte
38	IEC 61881-3:2012+AMD1:2013 CSV	Railway applications - Rolling stock equipment - Capacitors for power electronics - Part 3: Electric double-layer capacitors
39	IEC 61991:2019	Railway applications - Rolling stock - Protective provisions against electrical hazards
40	IEC 61992-1:2006+AMD1:2014 CSV	Railway applications - Fixed installations - DC switchgear - Part 1:General
41	IEC 61992-2:2006+AMD1:2014 CSV	Railway applications - Fixed installations - DC switchgear - Part 2:DC circuit-breakers
42	IEC 61992-3:2006+AMD1:2015 CSV	Railway applications - Fixed installations - DC switchgear - Part 3:Indoor d.c. disconnectors, switch-disconnectors and earthing switches
43	IEC 61992-4:2006+AMD1:2015 CSV	Railway applications - Fixed installations - DC switchgear - Part 4:Outdoor d.c. disconnectors, switch-disconnectors and earthing switches
44	IEC 61992-6:2006+AMD1:2014+AMD2:2020 CSV	Railway applications - Fixed installations - DC switchgear - Part 6: DC switchgear assemblies
45	IEC 61992-7-1:2006	Railway applications - Fixed installations - DC switchgear - Part 7-1: Measurement, control and protection devices for specific use in d.c. traction systems - Application guide
46	IEC 61992-7-2:2006	Railway applications - Fixed installations - DC switchgear - Part 7-2: Measurement, control and protection devices for specific use in d.c. traction systems - Isolating current transducers and other current measuring devices
47	IEC 61992-7-3:2006	Railway applications - Fixed installations - DC switchgear - Part 7-3: Measurement, control and protection devices for specific use in d.c. traction systems - Isolating voltage transducers and other voltage measuring devices
48	IEC 62128-1:2013	Railway applications - Fixed installations - Electrical safety, earthing and the return circuit - Part 1: Protective provisions against electric shock
49	IEC 62128-2:2013	Railway applications - Fixed installations - Electrical safety, earthing and the return circuit - Part 2: Provisions against the effects of stray currents caused by d.c. traction systems
50	IEC 62128-3:2013	Railway applications - Fixed installations - Electrical safety, earthing and the return circuit - Part 3: Mutual interaction of a.c. and d.c. traction systems
51	IEC 62236-1:2018	Railway applications - Electromagnetic compatibility - Part 1: General

52	IEC 62236-2:2018	Railway applications - Electromagnetic compatibility - Part 2: Emission of the whole railway system to the outside world
53	IEC 62236-3-1:2018	Railway applications - Electromagnetic compatibility - Part 3-1: Rolling stock - Train and complete vehicle
54	IEC 62236-3-2:2018	Railway applications - Electromagnetic compatibility - Part 3-2: Rolling stock - Apparatus
55	IEC 62236-4:2018	Railway applications - Electromagnetic compatibility - Part 4: Emission and immunity of the signalling and telecommunications apparatus
56	IEC 62236-5:2018	Railway applications - Electromagnetic compatibility - Part 5: Emission and immunity of fixed power supply installations and apparatus
57	IEC 62267:2009	Railway applications - Automated urban guided transport (AUGT) - Safety requirements
58	IEC TR 62267-2:2011	Railway applications - Automated urban guided transport (AUGT) - Safety requirements - Part 2: Hazard analysis at top system level
59	IEC 62278:2002	Railway applications - Specification and demonstration of reliability, availability, maintainability and safety (RAMS)
60	IEC TR 62278-3:2010	Railway applications - Specification and demonstration of reliability, availability, maintainability and safety (RAMS) - Part 3: Guide to the application of IEC 62278 for rolling stock RAM
61	IEC TR 62278-4:2016	Railway applications - Specification and demonstration of reliability, availability, maintainability and safety (RAMS) - Part 4: RAM risk and RAM life cycle aspects
62	IEC 62279:2015	Railway applications - Communication, signalling and processing systems - Software for railway control and protection systems
63	IEC 62280:2014	Railway applications - Communication, signalling and processing systems - Safety related communication in transmission systems
64	IEC 62290-1:2014	Railway applications - Urban guided transport management and command/control systems - Part 1: System principles and fundamental concepts
65	IEC 62290-2:2014	Railway applications - Urban guided transport management and command/control systems - Part 2: Functional requirements specification
66	IEC 62290-3:2019/COR1:2020	Railway applications - Urban guided transport management and command/control systems - Part 3: System requirements specification
67	IEC 62313:2009	Railway applications - Power supply and rolling stock - Technical criteria for the coordination between power supply (substation) and rolling stock

68	IEC 62425:2007	Railway applications - Communication, signalling and processing systems - Safety related electronic systems for signalling
69	IEC 62427:2007	Railway applications - Compatibility between rolling stock and train detection systems
70	IEC 62486:2017	Railway applications - Current collection systems - Technical criteria for the interaction between pantograph and overhead contactline (to achieve free access)
71	IEC 62497-1:2010+AMD1:2013 CSV	Railway applications - Insulation coordination - Part 1: Basic requirements - Clearances and creepage distances for all electrical and electronic equipment
72	IEC 62497-2:2010	Railway applications - Insulation coordination - Part 2: Overvoltages and related protection
73	IEC 62498-1:2010/COR1:2010	Railway applications - Environmental conditions for equipment - Part 1: Equipment on board rolling stock
74	IEC 62498-2:2010/COR1:2010	Railway applications - Environmental conditions for equipment - Part 2: Fixed electrical installations
75	IEC 62498-3:2010/COR1:2010	Railway applications - Environmental conditions for equipment - Part 3: Equipment for signalling and telecommunications
76	IEC 62499:2021	Railway applications - Current collection systems - Pantographs, testing methods for contact strips
77	IEC 62505-1:2016	Railway applications - Fixed installations - Particular requirements for AC switchgear - Part 1: Circuit-breakers with nominal voltage above 1 kV
78	IEC 62505-2:2016	Railway applications - Fixed installations - Particular requirements for AC switchgear - Part 2: Disconnectors, earthing switches and switches with nominal voltage above 1 kV
79	IEC 62505-3-1:2020	Railway applications - Fixed installations - Particular requirements for AC switchgear - Part 3-1: Measurement, control and protection devices for specific use in AC traction systems - Devices
80	IEC 62505-3-2:2020	Railway applications - Fixed installations - Particular requirements for AC switchgear - Part 3-2: Measurement, control and protection devices for specific use in AC traction systems - Current transformers
81	IEC 62505-3-3:2020	Railway applications - Fixed installations - Particular requirements for AC switchgear - Part 3-3: Measurement, control and protection devices for specific use in AC traction systems - Voltage transformers
82	IEC 62520:2011	Railway applications - Electric traction - Short-primary type linear induction motors (LIM) fed by power converters
83	IEC 62580-1:2015	Electronic railway equipment - On-board multimedia and telematic subsystems for railways - Part 1: General architecture

84	IEC TS 62580-2:2016	Electronic railway equipment - On-board multimedia and telematic subsystems for railways - Part 2: Video surveillance/CCTV services
85	IEC 62589:2010	Railway applications - Fixed installations - Harmonisation of the rated values for converter groups and tests on converter groups
86	IEC 62590:2019	Railway applications - Fixed installations - Electronic power converters for substations
87	IEC 62590-3-1:2022	Railway applications - Fixed installations - Electronic power converters - Part 3-1: AC traction applications - Electronic power compensators
88	IEC 62597:2019	Magnetic field levels generated by electronic and electrical apparatus in the railway environment with respect to human exposure - Measurement procedures
89	IEC 62621:2011	Railway applications - Fixed installations - Electric traction - Specific requirements for composite insulators used for overhead contact line systems
90	IEC 62625-1:2013/COR1:2016	Electronic railway equipment - On board driving data recording system - Part 1: System specification
91	IEC 62625-2:2016	Electronic railway equipment - On board driving data recording system - Part 2: Conformity testing
92	IEC 62695:2014	Railway applications - Fixed installations - Traction transformers
93	IEC 62718:2013/COR1:2016	Railway applications - Rolling stock - DC supplied electronic ballasts for lighting fluorescent lamps
94	IEC 62724:2013	Railway applications - Fixed installations - Electric traction - Insulating synthetic rope assemblies for support of overhead contact lines
95	IEC TS 62773:2014	Railway applications - Procedure to determine the performance requirements for radio systems applied to radio-based train control systems
96	IEC 62845:2015	Railway applications - Radio remote control system of traction vehicles for shunting application
97	IEC 62846:2016	Railway applications - Current collection systems - Requirements for and validation of measurements of the dynamic interaction between pantograph and overhead contact line
98	IEC 62847:2016	Railway applications - Rolling stock - Electrical connectors - Requirements and test methods
99	IEC 62848-1:2016	Railway applications - DC surge arresters and voltage limiting devices - Part 1: Metal-oxide surge arresters without gaps
100	IEC 62848-2:2019	Railway applications - DC surge arresters and voltage limiting devices - Part 2: Voltage limiting devices
101	IEC 62864-1:2016	Railway applications - Rolling stock - Power supply with onboard energy storage system - Part 1: Series hybrid system

102	IEC 62888-1:2018	Railway applications - Energy measurement on board trains - Part 1: General
103	IEC 62888-2:2018	Railway applications - Energy measurement on board trains - Part 2: Energy measurement
104	IEC 62888-3:2018	Railway applications - Energy measurement on board trains - Part 3: Data handling
105	IEC 62888-4:2018	Railway applications - Energy measurement on board trains - Part 4: Communication
106	IEC 62888-5:2018	Railway applications - Energy measurement on board trains - Part 5: Conformance test
107	IEC 62888-6:2019	Railway applications - Energy measurement on board trains - Part 6: Requirements for purposes other than billing
108	IEC 62912:2015	Railway applications - Direct current signalling monostable relays of type N and type C
109	IEC 62912-2:2019	Railway applications - Direct current signalling monostable relays - Part 2: Spring type relays
110	IEC 62917:2016	Railway applications - Fixed installations - Electric traction - Copper and copper alloy grooved contact wires
111	IEC 62924:2017	Railway applications - Fixed installations - Stationary energy storage system for DC traction systems
112	IEC 62928:2017	Railway applications - Rolling stock - Onboard lithium-ion traction batteries
113	IEC 62973-1:2018	Railway applications - Rolling stock - Batteries for auxiliary power supply systems - Part 1: General requirements
114	IEC 62973-2:2020	Railway applications - Rolling stock - Batteries for auxiliary power supply systems - Part 2: Nickel Cadmium (NiCd) batteries
115	IEC 62973-3:2024	Railway applications - Rolling stock - Batteries for auxiliary power supply systems - Part 3: Lead acid batteries
116	IEC 62973-4:2021	Railway applications - Rolling stock - Batteries for auxiliary power supply systems - Part 4: Secondary sealed nickel-metal hydride batteries
117	IEC 62973-5:2023	Railway applications - Rolling stock - Batteries for auxiliary power supply systems - Part 5: Lithium-ion batteries
118	IEC 62995:2018	Railway applications - Rolling stock - Rules for installation of cabling
119	IEC 63076:2019+AMD1:2023 CSV	Railway applications - Rolling stock - Electrical equipment in trolley buses - Safety requirements and current collection systems
120	IEC 63190:2023	Railway applications - Fixed installations - Electric traction - Copper and copper alloy catenary wires for overhead contact line systems

Annex 8

(Representation of IN NC experts in IEC TC 09)

Sl. No.	IEC Technical Committee	Subgroups	Subjects	Nominated Experts
1	TC 09	ahG 19	Studying and reporting on ACEE Guides	—
		ahG 34	Gaseous Hydrogen Filling Stations	—
		ahG 33	Fixed installation - SCADA for Railways	—
		ahG 32	Lightning Protection for Traction Power Supply System of Rail Transit	—
		ahG 31	Sustainable electrified transportation (SET)	—
		ahG 30	IEC/TC 9 Standards Map	—
		ahG 28	Safe transmission protocol	—
		ahG 29	Interoperability and safety of dynamic wireless power transfer (WPT) for railways	—
		ahG 20	Study ACSEC Guide 120 in view of implications on the work of TC 9	—
		AG SLG	IEC UIC SLG (Strategic Liaison Group)	—
		AG SLG SG PHM	IEC UIC SLG Subgroup Prognostics Health Management	—
		AG SLG SG Trainet	IEC UIC SLG Subgroup Trainet	—
		AG SLG SG FI	IEC UIC SLG Subgroup Fixed Installations	—
		AG SLG SG Multimedia	IEC UIC SLG Subgroup Multimedia	—
		AG CAG	Chair's Advisory Group	—
		JWG 51	Fuel cell systems for railway applications	—
		JAHG 53	Fuel system components for rail	—
		JAHG 52	Fuel container for rail	—
		MT 60310	Railway applications - Traction transformers and inductors on board rolling stock	—
		MT 62128	Revision of IEC 62128 series	—
		MT 62973-1	Railway applications – Rolling stock – Batteries for auxiliary power supply systems – Part 1: General requirements	—
MT 62427	Railway applications – Compatibility between rolling stock and train detection systems	—		
MT 62425	Railway applications – Communication, signalling and processing systems – Safety related electronic systems for signalling	—		
MT 60913	Railway applications – Fixed installations – Electric traction overhead contact lines	—		

	MT 60349	Electric traction - Rotating electrical machines for rail and road vehicles	—
	MT 62278	Railway applications – Specification and demonstration of reliability, availability, maintainability and safety (RAMS)	—
	MT 61373	Railway applications - Rolling stock equipment - Shock and vibration tests	—
	MT 62888	Railway applications – Energy measurement on board trains	—
	MT 62486	Railway applications – Current collection systems – Technical criteria for the interaction between pantograph and overhead line (to achieve free access)	—
	MT 60310	Railway applications - Traction transformers and inductors on board rolling stock	—
	PT 62973-4	Railway applications - Rolling stock - Batteries for auxiliary power supply systems - Part 4: Secondary sealed nickel-metal hydride batteries	—
	PT 63498	System Energy Efficiency	—
	PT 63488	Railway applications - Technical criteria for the co-ordinations in neutral-section passing system for train	—
	PT 63495	Interoperability and safety of dynamic wireless power transfer (WPT) for railways	—
	PT 63477	Coordination requirements and energy-saving performance evaluation for EFS in DC Traction Power Systems	—
	PT 63452	Railway applications – Cyber security	—
	PT 591	Railway Applications - Rolling Stock - Specification and verification of energy consumption	—
	PT 63341-2	Railway applications - Rolling stock - Fuel cell systems for propulsion - Part 2: Hydrogen storage system	—
	PT 62848-3	Railway application – Fixed installations – D.C. surge arresters and voltage limiting devices – Part 3: Application Guide	—
	PT 63438	Railway applications - Fixed installations – Protection principles for AC and DC electric traction power supply systems	—
	PT 63453	Railway applications - Current collection systems - Validation of simulation of the dynamic interaction between pantograph and overhead contact line	—

		PT 63536	Railway applications - Signalling and control systems for non UGTMS Urban Rail systems	—
		PT 641	Railway applications - Fixed installations - Requirements for the validation of simulation tools used for the design of traction power supply systems	—
		PT 62973-5	Railway applications - Rolling stock - Batteries for auxiliary power supply systems - Part 5: Lithium-ion batteries	—
		PT 62973-3	Railway applications – Rolling stock – Batteries for auxiliary power supply systems – Part 3: Lead acid batteries	—
		PT 62973-2	Railway applications - Batteries for auxiliary power supply systems - Part 2: Nickel Cadmium (NiCd) batteries	—
		WG 40	Railway applications-Urban Guided Transport Management and Command/Control Systems	—
		WG 43	Railway applications - Train communication network (TCN)	—
		WG 48	ODIS - On board Driving Information System	—
		WG 46	Onboard multimedia systems for railways	—
		WG 50	Railway applications – Fixed installations – Electronic power converter	—