

**BUREAU OF INDIAN STANDARDS**

**MINUTES**

<b>MEETINGS</b>	<b>DAY &amp; DATE</b>	<b>TIME</b>	<b>VENUE</b>
i) 28 <sup>th</sup> meeting of Primary cells and Batteries Sectional Committee, ETD 10, ii) 30 <sup>th</sup> meeting of Secondary Cells and Batteries Sectional Committee, ETD 11, iii) 13 <sup>th</sup> meeting of Electrical Energy Storage Systems Sectional Committee, ETD 52.	Wednesday 24 <sup>th</sup> July 2024	1030 h	Online (Webex)

**Chairmen**

Shri N.S. Sodha  
Shri Pankaj Batra

**Member secretary**

Shri Neeraj Kushwaha

**Participants:-**

**ETD 10 PRIMARY CELLS AND BATTERIES SECTIONAL COMMITTEE**

**ATTENDANCE**

<b>S.No.</b>	<b>Organization</b>	<b>Member Name</b>	<b>Member Email</b>
1	Power Grid Corporation of India, Gurugram	Shri N S Sodha	nss5419@gmail.com
2	CSIR - National Physical Laboratory, New Delhi	Dr. Sanjay R Dhakate Dr. B.P. Singh	dhakate@nplindia.org bps@nplindia.org
3	CSIR - Central Electrochemical Research Institute, Karaikudi	Shri Sundar Mayavan Dr. R. Sindhuja	sundarmayavan@cecri.res.in rsindhuja@cecri.res.in
4	Chakr Innovation Private Limited, Gurugram	Shri Mohit Singhvi Shri Abhijit Datta	mohit.singhvi@chakr.in datta.abhijit@chakr.in
5	Consumer Voice, New Delhi	Shri Ashim Sanyal Shri B.K. Mukhopadhyay Shri H. Wadhwa	coo@consumer-voice.org mukhopadhyay.bhaskar@gmail.com hswadhwa@gmail.com
6	Controllerate of Quality Assurance, New Delhi	Deputy Controller E	cqalbang-dgqa@nic.in
7	Duracell India Operations Private Limited, Bengaluru	Shri Vikash Kumar Dr. S. Venkatraman	kumar.vi.2@duracell.com venkatraman.s@duracell.com
8	Electrical Research and Development Association, Vadodara	Shri Rakesh Patel Shri Ravi Singh	rakesh.patel@erda.org ravi.singh@erda.org
9	Eveready Industries India Limited, Kolkata	Shri Arun Sahay Shri Indrajit Moitra	aksahay@eveready.co.in indrajit@eveready.co.in
10	INDO National Limited, Chennai	Shri B.Narendra Prasad Shri B.Shanmugamani	narendraprasad@nippo.in shanmugamani@nippo.in

11	Indian Electrical and Electronics Manufacturers Association, New Delhi	Shri Vivek Arora	vivek.arora@ieema.org
		Saad Faruqui	saad.faruqui@ieema.org
12	Ministry of Environment Forest and Climate Change, New Delhi	Shri Vinod K. Singh	vinodsingh.77@gov.in
13	Panasonic Energy India Company Limited, Vadodara	Shri Abhishek.M.Sharma	Abhishek.Sharma03@in.panasonic.com
		Shri R.J. Bhambhani	rajesh.bhambhani@in.panasonic.com

**ETD 11 SECONDARY CELLS AND BATTERIES SECTIONAL COMMITTEE**  
**ATTENDANCE**

S.No.	Organization	Member Name	Member Email
1	Individual Capacity	Shri Pankaj Batra	pan_batra@hotmail.com
2	Automotive Research Association of India, Pune	Shri Sachin P. Pandit	pandit.aed@araiindia.com
3	Bharat Test House Private Limited, New Delhi	Shri Vaibhav Gupta	director@bharatetesthouse.com
		Shri Lalit Aggarwal	bthrai@bharatetesthouse.com
4	Central Electricity Authority, New Delhi	Shri Rajesh Kumar	rajesh.kumar76@nic.in
		Dr. Veepin Kumar	veepin.kumar@gov.in
5	Central Power Research Institute, Bengaluru	Dr P. Chandra Sekhar	pcs@cpri.in
		Shri Mohit Padwal	mohitpadwal@cpri.in
6	Controllorate of Quality Assurance, New Delhi	Deputy Controller E	cqalbang-dgqa@nic.in
7	Electrical Research and Development Association, Vadodara	Shri Rakesh Patel	rakesh.patel@erda.org
		Shri Ravi Singh	ravi.singh@erda.org
8	Engineers India Limited, New Delhi	Shri Rajesh Sinha	rajesh.sinha@eil.co.in
		Shri Viswa Teja Yerramathi	yv.teja@eil.co.in
9	Enphase Energy, Bangalore	Shri Praveen Krishnan	prkrishnan@enphaseenergy.com
10	Exide Industries Limited, Kolkata	Shri Subhankar Chakrabarty	sc@exide.co.in
		Shri Anjan Roy	Anjan@exide.co.in
11	HBL Power System Limited, Hyderabad	Shri Sanjeev Kumar	sanjeevkumar@hbl.in
		Shri M. Raghavendra Reddy	mrr@hbl.in
12	Indian Electrical and Electronics Manufacturers Association, New Delhi	Shri Vivek Arora	vivek.arora@ieema.org
		Shri Kumar Rahul	kumar.rahul@ieema.org
13	Log 9 Materials Scientific Private Limited, Bengaluru	Shri Saravanan Muniswamy	saravanan@log9materials.com
		Shri Nashim Akhtar	nashim.akhtar@log9materials.com
14	National Test House, Kolkata	Shri Yogesh Singh	ysingh@nth.gov.in
		Shri Sayantan Das	sayantan@nth.gov.in

15	React Laboratories, Bangalore	Smt. Madhura R	tech.operations@react-labs.com
		Smt. Monica H.S	monica@react-labs.com
16	Saft India Private Limited, Bengaluru	Shri Shirish Raghunath Kulkarni	Shirish.KULKARNI@saftbatteries.com
		Shri Arumugam Manickam	Arumugam.MANICKAM@Saftbatteries.com
17	Shreenath Smart Technologies Private Limited, Ahmedabad	Shri Nakul Patel	nakul@sstpl.co
		Shri Rahil Patel	rahil@sstpl.co
18	UL India Private Limited, Bengaluru	Shri V. Manjunath	manjunath.v@ul.org
		Smt. Rashmi R	rashmi.r@ul.com
		Shri Anand Kumar	anand.kumar@ul.com
19	Vision Mechatronics Private Limited	Dr. Rashi Gupta	director@vmechatronics.com

**ETD 52 ELECTRICAL ENERGY STORAGE SYSTEMS SECTIONAL COMMITTEE**  
**ATTENDANCE**

S.No.	Organization	Member Name	Member Email
1	In Individual Capacity	Shri Pankaj Batra	pan_batra@hotmail.com
2	Calcutta Electric Supply Corporation Limited, Kolkata	Shri Debnil Chakraborty	debnil.chakraborty@rpsg.in
		Shri Santanu Sen	santanu.sen@rpsg.in
3	Electrical Research and Development Association, Vadodara	Shri Asheesh Dhaneria	asheesh.dhaneria@erda.org
		Dr. Manmohan Waldiya	manmohan.waldiya@erda.org
4	Exicom Tele-Systems Limited, Gurugram	Shri P.M. Singh	pm.singh@exicom.in
		Shri Abhijeet Kumar	abhijeet.kumar@exicom.in
5	GETCO, Vadodara	Shri A.P. Shah	sldcremc@gmail.com
		Shri P. B. Suthar	pankajsuthar2006@gmail.com
6	IEEE India, Bengaluru	Shri Ravindra Desai	ravindra.desai@ieee.org
7	India Energy Storage Alliance, Pune	Shri Rahul Walawalkar	rwalawalkar@ces-ltd.com
		Shri Debi Prasad Dash	ddash@ces-ltd.com
8	Indian Electrical and Electronics Manufacturers Association, New Delhi	Shri Uttam Kumar	uttam.kumar@ieema.org
		Shri Kumar Rahul	kumar.rahul@ieema.org
9	International Copper Association India, Mumbai	Shri K N Hemanth Kumar	hemanth.kumar@copperalliance.org
		Shri Jyotish Pande	jyotish.pande@internationalcopper.org
10	Lohum Cleantech Private Limited, Greater Noida	Shri Rajat Verma	rajat.verma@lohum.com
		Shri Pratyush Sinha	pratyush.sinha@lohum.com

11	NTPC Limited, New Delhi	Shri dhirendra Joshi	djoshi@ntpc.co.in
		Shri Animesh Manna	amanna@ntpc.co.in
12	National Hydroelectric Power Corporation, Faridabad	Shri I.P. Ranjan	ipranjan@nhpc.nic.in
		Shri Shobha Kant	skant@nhpc.nic.in
13	National Institute of Technology, Jalandhar	Shri Manoj Morampudi	manojmorampudi@gmail.com
		Shri Pothuraja Ramakrishna	ramakrishnap@nitj.ac.in
14	Power Grid Corporation of India, Gurugram	Shri Subir Sen	subir@powergrid.in
		Shri Rajesh Kumar	rajeshkumar@powergrid.in
		Shri Manish Tiwari	manish.tiwari@powergrid.in
15	Rajasthan Electronics and Instruments Limited, Bengaluru	Shri S.R. Nirmal	sr.nirmal@reil.co.in
16	Solar Energy Corporation of India Limited, New Delhi	Shri Prashant Kumar Upadhyay	prashantu@seci.co.in
		Shri Muthuraj R	muthurajr@seci.co.in
17	The Energy and Resources Institute, New Delhi	Shri A. K. Saxena	ak.saxena@teri.res.in
		Smt Ashwini G. Mudgal	ashwini.mudgal@teri.res.in
		Shri Mukesh Kumar	mukesh.kumar@teri.res.in
18	UL India Private Limited, Bengaluru	Shri V. Manjunath	manjunath.v@ul.org
		Shri Sriparn Saurabh	sriparn.saurabh@ul.com
19	Vision Mechatronics Private Limited	Dr. Rashi Gupta	director@vmechatronics.com

**Invitees: -**

S.No.	Organization	Member Name	Member Email
1.	In personal capacity	Dr. Tata Narasinga Rao	tatanrao@gmail.com
2.	NITI Aayog	Shri Manoj Kumar Upadhyay	mk.upadhyay@gov.in

**Item 0 WELCOME ADDRESS BY THE CHAIRMEN**

Shri N.S. Sodha, Chairperson of ETD 10, Primary Cells and Batteries Sectional Committee, welcomed all the members present from different committees and Shri Manoj Kumar Upadhyay from NITI Aayog. He appreciated the efforts of the NITI Aayog for creating an elaborative report which identifies almost all chemistries present in the market. He also pointed that almost all the safety requirements are also covered in the report. He also expressed that it's interesting that first time a joint meeting of three BIS Committees related to Primary Batteries & Battery Systems has been organized by BIS to put across the same message to all concerned with standardization of Battery Systems in mind. He requested all the members to pool their experience to align with the report objective to formulate effective standards which are Chemistry Agnostic in nature. He encouraged all the members to participate actively in the meeting to build a way forward. He also emphasized that time is the essence & as desired by NITI Aayog all should discuss & finalize the proposal asap.

Shri Pankaj Batra, Chairperson of ETD 11, Secondary Cells and Batteries Sectional Committee, and ETD 52, Electrical Energy Storage Systems Sectional Committee, welcomed all the members present of the

committees. He explained that the initiative taken by the NITI Aayog for formulation of Chemistry agnostic standards for new battery technologies, is a great way for encouraging innovation, while at the same time ensuring a reliable and safe ecosystem from the upcoming battery technologies. BIS had similarly prepared standards for technology agnostic Battery Management System (BMS) for all technologies of Battery Energy Storage System, whether existing or upcoming. He also encouraged the committee members to read the report carefully and contribute in the formulation of the draft on chemistry agnostic standards for new battery technologies.

### **Item 1 CONFIRMATION OF THE MINUTES OF LAST MEETINGS**

There being no comments, the committee formally confirmed the minutes of the 27th meeting of Primary Cells and Batteries Sectional Committee, ETD 10 held on 03rd May 2024 which were circulated vide BISDG letter dated 29th May 2024.

There being no comments, the committee formally confirmed the minutes of the 29th meeting of Secondary Cells and Batteries Sectional Committee, ETD 11 held on 15th May 2024 which were circulated vide BISDG letter dated 10th June 2024.

There being no comments, the committee formally confirmed the minutes of the 12th meeting of Electrical Energy Storage Systems Sectional Committee, ETD 52 held on 23rd April 2024 which were circulated vide BISDG letter dated 27th May 2024.

### **Item 2 EXPECTATIONS FROM BIS BY NITI AAYOG – SHRI MANOJ KUMAR UPADHYAY, DEPUTY ADVISOR, NITI AAYOG.**

Shri Manoj from NITI Aayog provided background information, explaining that the report was prepared based on communication from the Prime Minister's Office (PMO). He mentioned that the report concluded that chemistry-agnostic parameters can be developed for niche battery chemistries that are still in laboratory testing or early market trials. This is not intended to replace or modify the existing testing systems or practices, but rather to facilitate the development of standards for new battery chemistries. This is an attempt to facilitate new battery chemistry which are not covered under existing standards by developing a standard(s) which would cover known/expected requirements to run them as pilot project, and once they have successful trial with learning of that, remaining/additional requirement could be added

### **Item 3 BRIEF OF NITI AAYOG REPORT FORMULATION OF CHEMISTRY-AGNOSTIC STANDARDS FOR ENERGY STORAGE TECHNOLOGIES- BIS**

Shri Neeraj Kushwaha, Member secretary explained the important highlights of the report and key expectations from the committees. He explained that most of the standards for batteries covers requirements for a particular chemistry for a particular application, thus the joint committee need to formulate a standard which can cover the requirements for any chemistry.

The attentions of all the members have been drawn to the 5.1 of the chapter 5 of report of NITI Aayog on “Developing Chemistry agnostic standards for energy storage technologies”, which suggests the 23 technical parameters, their definitions and the typical ranges of the parameters with respect to different chemistries. These parameters need to be considered while formulating the draft of chemistry agnostic standard.

The attentions of all the members have also been drawn to the 5.2 of the chapter 5, which suggests the 15 safety requirements that may be considered while drafting the standard. Test conditions for all the safety requirements have been given in the table 14 which refers to different standards.

Table 14 also suggests that there would be 2 parts of the standards, one would be for Mobility application and another would be for stationary application. All the members have been informed that the draft standard for mobility application would be formulated by the Transport Engineering Department (TED) of BIS, and Electrotechnical Department (ETD) i.e. the joint committee need to formulate the draft standard for the stationary application.

#### **Item 4 REVIEWS/COMMENTS FROM MEMBERS**

Shri Prashant Kumar Upadhyay from Solar Energy Corporation of India Limited (SECI), pointed out that IS 17067 (Part 2/Sec 1): 2019 (IEC 62933-2-1: 2017), “Electrical Energy Storage (EES) Systems Part 2 Unit Parameters and Testing Methods Section 1 General specification” and IS 17067 (Part 5/Sec 2): 2021 (IEC 62933-5-2: 2020), “Electrical Energy Storage (EES) Systems Part 5 Safety Requirements for Grid Integrated EES Systems Section 2 Electrochemical based systems” cover most of the requirements of electrical energy storage systems used for stationary applications. He requested the committee that the above-mentioned standards may be reviewed while drafting the standard for Chemistry agnostic standard for stationary application.

#### **Item 5 WAY FORWARD**

The joint committee, after deliberation, formed the following joint working group for formulation of Chemistry-agnostic standard for stationary applications:

1. Dr. Tata Narasinga Rao (Convenor) (Co-opted as a member of ETD 11)
2. Chakr Innovation – Shri Abhijit Datta
3. Lohum Cleantech – Shri Pratyush
4. EIL – Shri Viswa Teja
5. UL – Shri Manjunath V, Shri Sriparn Saurabh
6. Exide Energy – Shri Bala Raghupathy
7. Vision Mechatronics – Smt. Rashi Gupta
8. IESA – Shri Debi Prasad
9. NITI Aayog – Shri Manoj Kumar Upadhyay

The joint committee requested the joint working group to provide the working draft within 3 months (25 October 2024)

#### **Item 6 ANY OTHER BUSINESS**

The committee decided to co-opt Dr. Tata Narasinga Rao in ETD 11, Secondary Cells and Batteries Sectional Committee.

There being no other business, the meeting ended with the vote of thanks of both the chairpersons.