
Re: ETD-16, Approval of draft minutes of 31st meeting

From : S Sudhakara Reddy <ssreddy@cpri.in>
Subject : Re: ETD-16, Approval of draft minutes of 31st meeting
To : ETD DEPARTMENT <eetd@bis.gov.in>
Cc : Head Electrotechnical <heetd@bis.gov.in>

Wed, Jan 24, 2024 03:01 PM

Dear Mr Neeraj,
Minutes Approved.

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With best regards
S.Sudhakara Reddy
Additional Director and Head
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Central Power Research Institute
P.B.No.8066, Prof Sir C.V.Raman Road
Bangalore-560080
Phone:080-22072515
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From: "ETD DEPARTMENT" <eetd@bis.gov.in>
To: "S Sudhakara Reddy" <ssreddy@cpri.in>, "S Sudhakara Reddy" <ssreddy.cpri@nic.in>
Cc: "Head Electrotechnical" <heetd@bis.gov.in>
Sent: Tuesday, January 16, 2024 4:55:38 PM
Subject: ETD-16, Approval of draft minutes of 31st meeting

Dear Sir,

Please find attached the draft minutes of the 31st meeting of the Transformers Sectional Committee (ETD 16) held on 18/12/2023 for your kind consideration and approval.

Thanks & Regards

Neeraj Kushwaha,

Member secretary ETD-16.

विद्युत तकनीकी विभाग | Electrotechnical Department

भारतीय मानक ब्यूरो | Bureau of Indian Standards

उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय | Ministry of Consumer Affairs, Food & Public Distribution

भारत सरकार | Government of India

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BUREAU OF INDIAN STANDARDS

MINUTES

MEETING	NO. OF MEETING	DAY & DATE	TIME	VENUE
Transformers Sectional Committee, ETD 16	31 st	Monday, 18 th December 2023	1000 Hrs	CCAR Auditorium, CPRI. Prof. Sir C.V. Raman Road, Sadashivanagar, Sub-Post Office P.B. No. 8066, Bengaluru-560080

Member Present-

Sr. No.	Organization Name	Member Name	Email
1.	Central Power Research Institute, Bengaluru	Shri S. Sudhakar Reddy	ssreddy@cpri.in
2.	Bureau of Indian Standards	Shri Neeraj Kushwaha	eetd@bis.gov.in
3.	Calcutta Electric Supply Corporation Limited, Kolkata	Shri Rajarshi Ghosh	rajarshi.ghosh@rpsg.in
4.	Cargill India Private Limited, Gurugram	Shri Naveen Jain	naveen_jain@cargill.com
5.	CTR Manufacturing Industries Limited, Ghaziabad	Shri S. A. Vyas	vyas_sal2@yahoo.com
6.	E.I. DuPont India Private Limited, Gurugram	Shri Sailesh Porohit	sailesh.purohit@dupont.com
7.	Electrical Research and Development Association, Vadodara	Shri Kapil Sharma	kapil.sharma@erda.org
8.	Hitachi Metals (India) Private Limited, Gurugram	Shri K Thukaram	thukaram.k@india.praterial.com
9.	In Personal Capacity	Shri Rajaram shinde	rp@tatapower.com
10.	In Personal Capacity	Shri Moorkath Vijayakumaran	vmoorkath@yahoo.co.in
11.	In Personal Capacity	Nagarjuna Babu Nannapaneni	nagarjunababu.nannapaneni@gmail.com
12.	International Copper Association India, Mumbai	Shri Manas Kundu	manas.kundu@coppealliance.org
13.	Ministry of Heavy Industries and Public Enterprises, New Delhi	Shri Tushar Srivastava	divhei-dhi@gov.in
14.	National High Power Test Laboratory Private Limited, Sagar	Shri Ramesh K Patel	ramesh.patel@nhptl.com
15.	National Hydroelectric Power Corporation, Faridabad	Shri Tsering Chosphel	tchosphel@nhpc.nic.in
16.	NTPC Limited, New Delhi	Shri Koushik Das	koushikdas@ntpc.co.in
17.	Shri Krsna Sudarshan Urja Private Limited, Jaipur	Shri Ajay Sanghi	ajaysanghi@shrikrnsa.com
18.	Siemens Limited, Mumbai	Shri C. Jayasenan	c.jayasenan@siemens.com

19.	Tata Power Limited, Mumbai	Shri Pramod Tupe	pbtupe@tatapower.com
20.	Tata Power Limited, Mumbai	Shri Ravindra Maruti Bhanage	ravindra.bhanage@tatapower.com
21.	Toshiba Transmission and Distribution Systems (India) Private Limited, New Delhi	Shri K.V. Kameswara Rao	kameswararao.kanuru@toshiba-ttdi.com
22.	Transcon Industries, Hyderabad	Shri Amar Pal Gampa	amar.gampa@gmail.com

Item 0 WELCOME ADDRESS BY THE CHAIRMAN

Shri S Sudhakara Reddy, Chairman welcomed all the members present. He expressed that face to face meetings are more fruitful for technical discussions and arriving at conclusions. He requested members to ensure product quality and sustainability while preparing the draft documents. He also expressed that a number of drafts pending at committee's end including revision of standards and formulation of new standards. He also mentioned to revise all the pre 2000 standards.

Shri Neeraj Kushwaha, Member Secretary welcomed all the members present. He explained the reforms in the standardization process. He also explained the research and development guidelines of BIS to validate test methods, test results, any data for formulation and revision of standards.

Item 1 CONFIRMATION OF THE MINUTES OF LAST MEETING

1.1 The minutes of the 30th meeting of Transformers Sectional Committee, ETD 16 held on 14th November 2023 were circulated vide BISDG letter dated 11th December 2023 and it was decided to confirm the minutes in case no comments received from MHI in 15 days. The above mentioned minutes were circulated to MHI via email dated 19th December 2023. MHI via letter dated 28th December 2023 confirmed that MHI had no comments to offer. In view of the above, The minutes are confirmed.

1.2 ACTION ARISING OUT OF PREVIOUS MEETING

Sl. No.	Item No. of Minutes of 29th Meeting	Subject	Action taken/ Remarks	Decision Taken
a.	2.1 (a)	Fresh Nominations request to be sent to following members: 1) Easun-MR Tap Changers 2) NHPTL 3) REC 4) Tata Power-DDL 5) PGCIL	Fresh nominations requested.	NHPTL was present in the meeting. For rest of the members mentioned, The committee decided to drop the organizations from the composition.
b.	2.3 (a)	To drop following organizations from the composition due to poor participation 1) AVI-Oil India Pvt. Ltd. 2) Vijai Electricals Ltd. 3) Kotsons	Dropped	The committee noted the information.

c.	2.3 (b)	To co-opt Ms/ Hitachi Energy in place of M/s ABB India Ltd. (as M/s ABB India Ltd. has been taken over by Ms/ Hitachi Energy) and request for nominations – Shri Thukaram to provide contact details	Information sought from Shri K Thukaram. No reply received.	Shri K Thukaram to provide contact details.
d.	2.3 (c)	<p>To request following organizations for active participation and fresh nominations:</p> <ul style="list-style-type: none"> • Crompton Greaves Power Ltd. – Shri Rajaram Shinde to provide contact details • Maharashtra State Electricity Distribution Company Limited, Power Grid Corporation of India Ltd, REC Ltd. 	<p>Active nominations and fresh nominations were requested.</p> <p>No reply received.</p>	The committee decided to drop the organizations due to inactive participation in committee meetings.
e.	5.1 (c)	<p>Comment received from Ms. G. Girija Central Power Research Institute:</p> <p>“As per IS 1180 Amendment 4 published in March 2021, it is mentioned that</p> <p>21.5.3.1 Pressure test (type test) For transformers up to and including 100 kVA: The transformer tank shall be subjected to air pressure of 100 kPa for 30 min (15 kPa for 30 min for corrugated tanks) and vacuum of 760 mm of mercury for 30 min.</p> <p>Achieving Vacuum of 760 mm of Hg is possible at sea level only, not possible at higher altitude”</p> <p>The committee considered the comments received and agreed to issue an amendment to correct the same.</p> <p>It was suggested that assistance can be taken from CBIP Manual on Transformers – Publication no. 317 in the preparation of this amendment.</p>	Shri Rajaram Shinde and Shri C jayasenani may please update the committee regarding the draft.	<p>The Committee decided to form a Working group (WG-01) for revision of 1180 (Part 1) and (Part 3) with the members as given below:</p> <ol style="list-style-type: none"> 1. Shri Rajaram Shinde (Convenor) 2. Shri C. Jayasenani 3. Shri Kapil Sharma (ERDA) 4. Rajaram Chennu 5. Shri K.V. Kameswara Rao <p>The working group is requested to prepare draft revision documents considering all the comments by 15th April.</p>

		The committee requested Shri Rajaram Shinde and Shri C Jayasenan to provide draft amendment within 01 month; which will be sent for wide circulation for 01 month in consultation with Chairperson.		
f.	5.1 (d)	<p>Comment received from Hammond Power Solutions: “We have few customer who ask for 2 MVA, 11kV/0.433kV, level 2/1 with 10% or 8% impedance. But, BIS 1180 defined impedance should be 6.25% only.</p> <p>1) As per technical opinion if losses defined in IS 1180 by considering specific impedance than it will be conflicting to supply transformer with higher impedance for same loss level even though it is better from SC point of view.</p> <p>2) As BIS formed to build uniform specification and adoptability, if variation in impedance allowed than standardization concept will be questioned.</p> <p>Kindly confirm from BIS point of view and for technical understanding whether we can supply above requirement which not complying with BIS requirement.”</p> <p>It was informed that the recommended values of percent impedance have been specified in the standard and it is up to the manufacturer and user to decide upon the percent impedance value provided maximum total losses specified in the standard are complied with.</p> <p>However, members suggested that a note may be added under the respective clauses providing clarity on the percent impedance values specified.</p>	Shri Rajaram Chennu may please update the committee regarding the draft note.	The Committee decided to refer the comment to WG-01 for considering revision of IS 1180 (Part 1) and 1180 (Part 3).

		<p>The committee agreed to the above suggestion and requested Shri Rajaram Chennu to provide the draft note as per discussion held.</p> <p>Member Secretary was requested to include the note in the draft amendment and to wide circulate the same for 01 month.</p>		
g.	5.1 (h)	<p>Comment from Bangalore Electricity Supply Company Limited.</p> <p>“As per IS 1180:2014 (Part1), the Air clearances for phase to phase and phase to earth are provided separately for Bushings mounted on Transformers and cable Box type Transformers.</p> <p>Manufacturers are supplying cable box type transformers to self-execution consumers in BESCOM. And no manufacturer has conducted Type Tests for cable box type Trs. They provide the type tests for open bushing type transformers, stating there is no change in design. only the terminations are brought out duly maintaining the air clearances as per IS 1180:2014 (Part1) Table 11.</p> <p>Hence, it requested to kindly clarify, whether to insist all the Type Tests as per IS 1180:2014 (part 1) for the transformers with air filled cable-end box/connection chamber. If not, which tests are required to be conducted on cable box type transformers?”</p> <p>The committee considered the same and is of the opinion that the transformer shall be tested with the cable mounted, which simulates the actual service condition.</p> <p>The committee considered the query received and decided to refer the same to expert’s group</p>	<p>The panel may update the committee.</p> <p>ETD 06 was requested to formulate an Indian Standard on Epoxy bushing.</p>	<p>The Committee decided to refer the comment to WG-01 for considering revision of IS 1180 (Part 1) and 1180 (Part 3).</p>

		for 'clarification on the standards'. The committee also decided to request ETD 06 committee for formulating an Indian Standard on epoxy bushings.		
h.	6.1 (a)	The committee reviewed ETD 16 Programme of Work and decided as below: To reprint IS 9815 (Part 1): 1994 and IS 10161: 1982 with required editorial changes and updated references as there are no technological advancements in the products covered under these standards.	These 2 standards are under Wide circulation stage.	The committee noted the information provided.

Item 2 REVIEW OF COMPOSITION OF SECTIONAL COMMITTEE, ETD 16

2.1 The committee reviewed the composition of the committee and decided to write to CEA to issue an advisory to all the utilities to be in the composition of ETD 16.

2.2 The committee noted the information of panels as given in Annex 2 of the agenda. Member secretary was requested to review all the panels and keep only those panels which are relevant in the form of working groups.

2.3 The committee noted the information of panels as given in Annex 3 of the agenda.

2.4 a) Identification and involvement of talent available in the country related to the subject dealt by the committee and methodology to involve them in the proceedings of the Committee

The committee noted the information provided.

2.4 b) Co-option requests- The committee considered the co-option requests. After detailed deliberation, The chairperson decided to defer the decision for co-option requests in the next committee meeting.

Item 3 APPROVAL OF DOCUMENTS/AMENDMENTS FOR FINALIZATION/PRINTING

SI No.	Draft Indian Standard	Circulated vide BISDG letter No. & date	Remarks
a)	Doc ETD 16 (23039) Onsite diagnostic testing of power transformers for condition health assessment	Circulated vide BISDG letter No. ETD 16/T- dated 24 th July 2023	The committee decided to finalize the document.
b)	Doc ETD 16 (15899)	Circulated vide BISDG letter No. ETD 16/T- dated 2 nd July 2020	The committee decided to finalize the amendment.

	Power transformers: Part 5 ability to withstand short circuit (First Revision) Amendment – 1 of IS 2026 (Part 5) : 2011	This document is pending on standardization portal at finalization stage since 05-05-2021. The committee may review and decide.	
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Item 4 APPROVAL OF DOCUMENTS/AMENDMENTS FOR WIDE CIRCULATION

The committee noted the information provided.

Item 5 QUERIES ON INDIAN STANDARDS

IS No.	Indian Standard	Commentator	Comments	Decision
a)	IS 1180 series	Shri Tara Chand Choudhary, Rajasthan Transformer Manufacturers Association	Comments received For using aluminium foil winding in 1180 series Please see ANNEX 4 of Agenda for details. The committee may consider.	The Committee decided to refer the comment to WG-01 for considering revision of IS 1180 (Part 1) and 1180 (Part 3).
b)	IS 1180 (Part 1) & IS 1180 (Part 3)	Shri K. V. Kameswara Rao. Toshiba Transmission & Distribution Systems(India) PVT LTD.	Clarification sought regarding mixed combinations of Aluminium winding on HV side and Copper winding on LV side.- “This is bring to your kind notice that as per regular practice, we are using any one type of winding material (Aluminium or copper) to manufacture the transformer HV & LV windings. But, now we have received a new enquiry from one of our customer to manufacture the Transformer by using two different winding material for HV &LV windings for cost controlling purpose. .(i.e. HV- Aluminium material & LV- Copper material). In this connection, we need a clarification as per IS 1180 mixed combination of material is acceptable or not to manufacture the transformer.” The committee may consider.	The Committee decided to refer the comment to WG-01 for considering revision of IS 1180 (Part 1) and 1180 (Part 3).

c)	Usage of oil filled transformers with Esters, inside of the commercial and residential buildings.	Shri K. V. Kameswara Rao. Toshiba Transmission & Distribution Systems(India) PVT LTD.	Please see Annex 5 of Agenda for details. The committee may consider.	The Committee decided to refer the comment to WG-01 for considering revision of IS 1180 (Part 1) and 1180 (Part 3).
d)	Usage of natural ester oil in non-sealed type transformers	Shri K. V. Kameswara Rao. Toshiba Transmission & Distribution Systems(India) PVT LTD.	Please see Annex 6 of Agenda for details. The committee may consider.	The Committee decided to refer the comment to WG-01 for considering revision of IS 1180 (Part 1) and 1180 (Part 3).
e)	IS 1180-1 amendment 4 for 315 kVA rating	Shri K. V. Kameswara Rao. Toshiba Transmission & Distribution Systems(India) PVT LTD.	Please see Annex 7 of Agenda for details. The committee may consider.	The Committee decided to refer the comment to WG-01 for considering revision of IS 1180 (Part 1) and 1180 (Part 3).
f)	IS 1180-1 amendment 4	Shri K. V. Kameswara Rao. Toshiba Transmission & Distribution Systems(India) PVT LTD.	Please see Annex 8 of Agenda for details. The committee may consider.	The Committee decided to refer the comment to WG-01 for considering revision of IS 1180 (Part 1) and 1180 (Part 3).
g)	IS 1180 (Part 1):2014	ITMA	The following comments have been received from ITMA:- “Please find attached herewith the request received from one of our Sr Members & Vice President East, Zone Mr Asish Das, requesting for referring to the issue of "Thermometer pocket with cap as per IS:3639-1966 Reaffirmed in 2021" be clearly specifically mentioned in the item g of cl. 20.1 of IS : 1180 in standard fittings. It has been stated that though IS: 3639 has been mentioned in the referred Standards in the IS: 1180, is not being earnestly followed, and needs to be mentioned in the standard fittings cl. g itself. Besides another issue is regarding "Thermometer POT details for measurement of ambient Temperature around	The Committee decided to refer the comment to WG-01 for considering revision of IS 1180 (Part 1) and 1180 (Part 3).

			Transformer to be as per IS:2026/1962" as some specific Time constant is required in falling/rising the temperature. May kindly see and place it before the Technical Committee ETD 16 for discussion and issue of necessary amendment in cl: 20.1 (g) of IS: 1180 and for measurement of ambient temperature etc. accordingly, since the agenda is currently under preparation/issue."	
h)	IS 18284:2023	Shri Rajaram Shinde	Observations:- "1) Repair of transformers originally filled with natural ester needs special care & looks missed in std. 2) Routing test name should be same as 1180 part 1, 3) IOVT test needs to redefine 4) Polarisation Index test relevance to dry type needs to be confirmed from utilities like CESC, Tata power where dry type are more. 5) Rating needs to be discussed." The committee may consider.	The committee requested Shri Rajaram Shinde to prepare an amendment for IS 18284:2023 in incorporating these comments.
i)	IS 18284:2023	MP Small scale Industries Organization	Comments received from MPSSIO are shared along with the agenda.	The committee decided to drop the comments as these comments have already been discussed in the 29 th meeting of the committee.

Item 6 PRESENT POSITION OF WORK

6.1 The committee noted the information given in the Agenda.

6.2 Present status of work as identified during previous meetings of ETD 16 are given below:

Sl no.	Item no. of the last meeting	IS number/ title	Decision taken during last meeting	Action taken/Status	Decision Taken
i)	6.1 (1)	IS 2026 : Part 3 : 2018 Power transformers Part 3 insulation levels dielectric tests and external clearances in air	The committee considered the comments provided by Shri P Ramachandran and decided to adopt the corresponding IEC amendment in toto.	The draft is under Wide Circulation. The committee may consider.	The committee decided to finalize the document if no comments received in WC.

			The committee decided to wide circulate the amendment for 01 month.		
ii)	6.1 (2)	IS 2026 : Part 10 : 2009 Power transformers Part 10 determination of sound levels	The committee committed considered the comments provided by Shri V K Lakhiani and decided to revise the existing standard to align it with the latest IEC standard. The committee decided to wide circulate the draft document for 01 month.	The draft is under Wide Circulation. The committee may consider.	The committee decided to finalize the document if no comments received in WC.
iii)	6.1 (3)	IS 2026 : Part 10 : Sec 1 : 2018 Power transformers Part 10 determination of sound levels	The committee considered the comments provided by Shri V K Lakhiani and decided to adopt the corresponding IEC amendment in toto. The committee decided to wide circulate the amendment for 01 month.	The draft is under Wide Circulation. The committee may consider.	The committee decided to finalize the document if no comments received in WC.
iv)	6.1 (5)	IS 2026 (Part 21): 2018 Power transformers Part 21 standard requirements terminology and test code for step - Voltage regulators	The committee accepted the request received from Shri Manas Kundu to extend the timeline for submission of comments by 01 month.	Inputs awaited.	The committee accepted the request received from Shri Manas Kundu to extend the timeline for submission of comments by 02 months.
v)	6.1 (6)	IS 2772: 1982 Specification for non - Flameproof mining transformers for use below ground First Revision	The committee decided to request Shri Nagarjuna Babu to review the comparison document prepared by ETD 22 committee and also to obtain comments from DGMS and to submit his final recommendation.	Shri Nagarjuna Babu reviewed the comparison document by ETD 22. The standard has been transferred to ETD 22 with the consent of DGMS. The committee may note.	The committee noted the information.
vi)	6.1 (7)	IS 5142: 1969 Specification for continuously variable voltage auto - Transformers	The committee requested Shri Ashok Kaul, ITMA to review the standard and to provide the draft revision document within 2 months.	Inputs awaited.	The committee decided to archive the IS 5142:1969.

			<p>Recommendation from ARP report: IEC 61558-2-14:2012 To be adopted as an Indian Standard</p> <p>Detailed report sent to members via BIS portal on 24th March 2022.</p> <p>After detailed deliberation, the committee requested Shri Dinesh Dave to review the ARP report submitted by BIS officer and other available standards on the subject and to provide a draft revision document within 01 month.</p>		
vii)	6.1 (8)	IS 8447 : 1989 Manually operated voltage regulators for domestic use - Specification First Revision	<p>The committee considered the comments received.</p> <p>Members suggested that the standard may be reprinted as there are no technological advancements in this product.</p> <p>After detailed deliberations, the committee requested Member Secretary to prepare a draft revision document in consultation with Shri Debdas Goswami and also incorporating the changes suggested by Shri Nagarjuna Babu.</p> <p>The committee decided to send the draft document for wide circulation for 02 months.</p>	The document is being sent along with the agenda for review of the committee.	The committee decided to Wide Circulate the prepared document after incorporating the comments.
viii)	6.1 (9)	IS 9147 : 1979 Specification for cable sealing boxes for oil - Immersed transformers suitable for paper - Insulated lead sheathed	The committee considered the comments received and ARP report submitted by BIS officer.	The panel may update the committee.	The panel conveyed to the committee members that they are expected to submit the report within one month and to

		<p>cables for highest system voltages from 12 kV up to and including 36 kV</p>	<p>Members suggested that the standard may be revised incorporating other types of cable boxes now being used in transformers.</p> <p>After detailed deliberations, the committee constituted a panel for preparation of a draft revision document:</p> <p>Shri Rajaram Chennu, CPRI – <i>Convener</i> Shri Kaushik Chowdhury, CESC Shri Rajaram Shinde, Cargill Shri TejasMahale, Scientist B, BIS Member from EIL</p> <p>Convener was requested to co-opt additional members from OEMs if required.</p> <p>The panel was requested to provide a draft revision document within 03 months.</p>		<p>complete the draft within six months.</p>
ix)	6.1 (10)	<p>IS 10161 : 1982 Specification for moving coil voltage regulators</p>	<p>The committee considered the comments received.</p> <p>Members suggested that the standard may be reprinted as there are no technological advancements in this product.</p> <p>Based on the views expressed by members, the committee decided to reprint this standard without any technical modifications.</p> <p>Member Secretary was requested to prepare the draft revision document in consultation with Shri Debdas Goswami and to</p>	<p>The document is under editing stage.</p>	<p>The committee noted the information.</p>

			wide circulate the same for 02 months.		
x)	6.1 (11)	IS 11333 : 1985 Specification for flameproof dry type transformers for use in mines	The committee decided to request Shri Nagarjuna Babu to review the comparison document prepared by ETD 22 committee and also to obtain comments from DGMS and to submit his final recommendation	Shri Nagarjuna Babu reviewed the comparison document by ETD 22. The standard has been transferred to ETD 22 with the consent of DGMS. The committee may note.	The committee noted the information.
xi)	6.1 (13)	IS 12977 : 1990 Arc furnace transformers specification	IEEMA informed that they have not received any inputs from their members on the revision of these standards. Shri Rajaram Shinde proposed to provide draft revision documents for these standards. The committee agreed to the proposal and requested Shri Rajaram Shinde to provide the draft revision documents within 06 months.	Drafts Awaited.	For IS 12977:1990 Shri Rajaram Shinde is requested to explore IEEE 57.17 and provide draft standards in 1 month. For IS 13956:1994, It is decided to reprint the standard by updating the references if no comments received from Shri Rajaram Sinda in 1 month.
xii)	6.1 (14)	IS 13956 : 1994 Testing transformers - Specification			
xiii)	6.1 (15)	IS 13964 : 1994 Methods of measurement of transformer and reactor sound levels	The committee considered the comments received and decided to withdraw this standard as another standard based on corresponding IEC standard [IS 2026 (Part 10)] has already been published.	The withdrawal is under progress.	The committee noted the information.
xiv)	6.2 (a)	Regarding losses for 6.3 kVA and 10 kVA ratings in IS 1180 (Part 1)	The committee considered the comments received from GUVNL and Shri Nagarjuna Babu and also views expressed by DHI during the meeting regarding technical details/calculations/data/test results on the basis of	Draft Amendment awaited.	The Committee decided to refer the comment to WG-01 for considering revision of IS 1180 (Part 1) and 1180 (Part 3).

			<p>which the value of losses have been proposed.</p> <p>The committee requested Shri Rajaram Chennu to share the technical details/calculations/data/test results with DHI on the basis of which the value of losses have been proposed.</p> <p>Shri Chennu informed that the proposed losses have been prepared based on the test results/data available with the laboratories and also considering the loss levels proposed by GUVNL. He further clarified that the proposed loss levels are in line with the loss levels applicable after implementation of amendment no. 4.</p> <p>After detailed deliberation, the committee decided to wide circulate the proposed losses for both 6.3 kVA and 10 kVA through an amendment for 02 months.</p> <p>It was further decided to prepare similar amendment for IS 1180 (Part 3) also and to wide circulate the same for 02 months.</p>		
xv)	6.2 (c)	<p>Progress of work in Panel 4</p> <p>Revision of IS 3639</p>	<p>Shri Rajaram Shinde, Convener P-4 informed that the sub-groups under this panel are preparing draft documents based on IEC 60076-22.</p> <p>Shri Shinde agreed to provide the draft documents within 03 months.</p>	Shri Rajaram Shinde may please update the committee.	Shri Rajaram Shinde informed the committee that the draft will be prepared within six months

xvi)	6.2 (d)	Progress of work in Panel 11 Self protection / disconnection device for distribution transformers	Member from CPRI informed that a preliminary study on the project has been completed and final approval from internal committee is required after which the study report will be shared. The committee noted the inputs provided.	The panel may update the committee.	Panel informed to the committee that the CPRI research project is still under progress. The Report is to be submitted to the committee when it is completed.
xvii)	6.2 (e)	Progress of work in Panel 7 Solar transformers	It was informed that a draft document on the subject has been prepared by a small team under P-7. The committee considered the information provided and requested P-7 to finalize the draft document and to submit the same for further consideration of ETD 16. The committee also decided to request panel to consider CEA guidelines on the subject while finalizing the document.	The document is being shared along with the agenda for consideration of the committee. The committee may consider.	The committee decided to Wide Circulate the document after modification in the title of the standard.
xviii)	6.2 (f)	Progress of work in Panel 9 On site diagnostic testing of power transformers	The committee appreciated the efforts made by Shri Amandeep Singh and Shri Dilip Puhan in preparing the draft document. The committee decided to wide circulate the draft document for 02 months.	The document was wide circulated for 02 months. No comments received. The committee may consider.	The committee finalized the document for printing.
xix)	6.2 (g)	Progress of work in Panel 10 Dry type distribution transformers	Shri Rajaram Shinde informed that draft document on the subject (including the Energy Efficiency Levels) has been finalized by the panel after detailed deliberations. He further informed that the draft currently is being prepared (editorial changes, IS 12 formatting, references update etc.) for	The document is being shared along with the agenda for consideration of the committee. The committee may consider.	The committee decided to Wide Circulate the document after checking the footnote in the losses tables. Shri Rajaram Shinde to check the same.

			<p>submission to the ETD 16 committee and the same is expected to be completed by 01st week of December 2022.</p> <p>The committee appreciated the efforts made by the panel and requested the panel convener to submit the draft document by 07th November 2022.</p> <p>The committee also decided to request test laboratories for setting up facilities for testing of dry type transformers (e.g. climatic, environmental test facilities etc. as per IS 2026-11).</p> <p>Formal letters for creation of test facilities to be sent from ETD 16 and CEA to test laboratories.</p>		
xx)	6.2 (h)	Revision of IS 10028 series – Code of practice for selection, installation and maintenance of transformers	<p>After detailed deliberation, the committee decided to appoint Shri Rajarshi Ghosh, CESC as Convener of this panel.</p> <p>The committee decided to request Shri Rajarshi Ghosh accept the Convenership and to provide the draft revision documents by 31st December 2022.</p> <p>The committee also requested the panel to consider new proposal for online drying system for transformer oil.</p>	The convener may update the committee.	Shri Rajarshi Ghosh informed that the draft will be provided by 31 st March 2024. Committee requested Shri Rajarshi Ghosh to refer CEA guidelines for DT maintenance and installation.
xxi)	6.2 (i)	IS 8448 : 1989 ‘Automatic line voltage correctors step type for domestic use’	8448- The committee noted the information provided and requested Member Secretary to prepare draft document in consultation with Shri Debdas Goswami and also incorporating the	Drafts awaited.	The committee decided to create a working group convened by Shri Kapil Sharma (ERDA). Shri Kapil Sharma was requested to include

			<p>comments received from M/s Microtek.</p> <p>The committee decided to wide circulate the draft document for 02 months.</p>		<p>manufacturers and stakeholders to work in the panel.</p>
xxii)	6.2 (j)	Revision of IS 2026 (Part 2)	<p>Shri M Vijayakumaran has provided draft revision document which is based on IEC 60076-2. However, differences in the draft document and corresponding IEC standard have not been highlighted.</p> <p>Shri M Vijayakumaran may be requested to inform about the differences as mentioned above.</p> <p>The committee accepted the request received from Shri M Vijayakumaran for extending the timeline by 01 month and decided to request him to provide the draft revision document by 15th December 2022</p>	Shri M Vijayakumaran may update the committee.	Shri M Vijayakumaran stated that IEC 60076-2 may be adopted in toto. The committee decided to wide circulate the same for two months.
xxiii)	6.2(k)	IS 2026 (Part 7) Power transformers - Part 7: Loading guide for mineral-oil-immersed power transformers	<p>The committee accepted the request received from Shri M Vijayakumaran for extending the timeline by 01 month and decided to request him to provide the draft revision document by 15th December 2022</p>	Shri M Vijayakumaran may update the committee.	Shri M Vijayakumaran stated that IEC 60076-7 may be adopted in toto. The committee decided to wide circulate the same for two months.
xxiv)	6.2(l)	IS 2026 (Part 4) Terminal and tapping markings for power transformers	<p>The committee accepted the request received from Shri M Vijayakumaran for extending the timeline by 06 weeks and decided to request him to provide the draft revision document by 30th December 2022.</p>	Shri M Vijayakumaran may update the committee.	The committee requested Shri M Vijayakumaran to find IEC document for adoption.
xxv)	6.2 (m)	Progress of work in Panel 13 for revision of IS 1180 (Part 1)	<p>The committee noted the information provided. To write to all DISCOMs and all other stake holders like, ITMA, AITMA, IEEMA etc., for their</p>	The draft letter is still needs to be sent to all stakeholders.	The Committee decided to refer the comment to WG-01 for considering revision of IS 1180

			<p>comments/suggestions/feedback.</p> <p>the draft letter to be sent to all the stakeholders for their feedback/comments. The following points to be added in the draft letter:</p> <ul style="list-style-type: none"> - BEE Star labeling is mandatory for distribution transformers as per IS 1180 (Part 1) - Request to stakeholders for providing suggestions/comments along with appropriate field data - 02 months' time to be given to stakeholders for their comments 	<p>The committee may suggest any further information/data to be sought from the stakeholders which will help in the revision of Indian Standard.</p>	<p>(Part 1) and 1180 (Part 3).</p>
xxvi)	6.2(n)	New Standard on Voltage Regulating Distribution Transformers	<p>The committee noted the information provided and constituted below Panel to work on the document:</p> <p>Panel 15:</p> <p>Shri M Vijayakumaran, Convener Shri Rajaram Chennu, CPRI Expert from Tatapower Expert from NTPC Expert from CEA Shri Manas Kundu, ICAI</p> <p>The committee noted the comments received and requested concerned panel to complete the review of corresponding IEC standard and to provide their recommendation within 02 months.</p>	<p>Shri M Vijayakumaran, Convener may inform the progress of work in the panel.</p>	<p>The committee requested Shri Rajaram Chennu to review IEC 60076-24 to suggest for possibilities of adoption.</p>
xxvii)	6.2 (o)	New Standard on Essential requirements for Transformer Cores	<p>The committee decided to request Shri B C Nayak to</p>	<p>MHI may update the committee.</p>	<p>The MHI was requested to update the committee.</p>

			<p>expedite and provide the draft document.</p> <p>Shri Gaurav Joshi requested the committee to include his name in place of Shri B C Nayak.</p> <p>The committee requested Shri Gaurav Joshi to provide the status of the progress of work in the panel.</p>		
xxviii)	6.2 (r)	IEC/IEEE 60214-2: 2019 Tap-changers - Part 2: Application guidelines	<p>Shri S Vyas informed that there are some differences in the nomenclature being used in IEC standard and the nomenclature being followed in the Indian Industry. He suggested that IEC standard may be adopted incorporating the India specific changes.</p> <p>The committee requested Shri Vyas to provide the draft revision document based on corresponding IEC standard within 02 months.</p>	Shri Vyas may update the committee.	Shri Vyas informed the committee that the draft will be prepared in one month after discussion with the member secretary.
xxix)	6.2 (s)	IEC 61378-1:2011 Converter transformers - Part 1: Transformers for industrial applications IEC 61378-3: 2015 Converter transformers - Part 3: Application guide	The committee noted the inputs provided and decided to request Shri Subodh Prakash to provide his comments on the adoption of IEC standard within 01 month.	Shri Subodh Prakash, may update the committee.	The committee decided to request Shri Subodh Prakash to provide his comments on the adoption of IEC standard within two months following his extension request.
xxx)	8.2	New standard on Submersible Duty and Transformers Accessories	<p>After detailed deliberation, the committee constituted a panel for studying the available regional/international standards and industry practices and to provide a draft document within 02 months:</p> <p>a) Shri Ravindra Bhanage, Tata Power Company</p>	The panel may update the committee.	Shri Ravindra Bhanage updated that the draft is almost ready. It was decided to circulate the draft as P-draft for one month.

			Limited– Mumbai, <i>Convener</i> b) Shri Rajaram Chennu, CPRI c) Toshiba d) Hitachi e) Schneider f) CEA g) DMRC		
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Item 7 REVIEW/REAFFIRMATION OF PUBLISHED INDIAN STANDARDS

7.1 The committee noted the information given in the Agenda.

Item 8 NEW SUBJECTS AND FUTURE PROGRAMME OF WORK

8.1 & 8.2 The committee noted the information given in the Agenda.

Item 9 INTERNATIONAL ACTIVITIES

9.1 The committee noted the information given in the Agenda.

9.2 The committee noted the information given in the Agenda. The committee decided to adopt all the standards as mentioned in the table in toto. It was decided to wide circulate the standards for two months.

9.3 The committee noted the information given in the Agenda. Shri Rajaram Shinde briefed the committee about rhw meeting.

Item 10 IMPLEMENTATION OF INDIAN STANDARDS

The committee noted the information given in the Agenda.

Item 11 BIS YOUNG PROFESSIONAL PROGRAMME

The committee noted the information given in the Agenda.

Item 12 INFORMATION ON e-SALE OF STANDARDS BY BIS

The committee noted the information given in the Agenda.

Item 13 NATIONAL INSTITUTE FOR TRAINING IN STANDARDISATION (NITS)

The committee noted the information given in the Agenda.

Item 14 ROLLING ACTION PLAN FOR THE YEAR 2023-24

The committee noted the information given in the Agenda.

Item 16 DATE AND PLACE FOR THE NEXT MEETING

It was decided to hold the next meeting in virtual mode. Date to be decided in consultation with the chairperson.

Item 17 TERMS OF REFERENCE (TORS) FOR RESEARCH AND DEVELOPMENT

The committee decided to discuss all the ToRs in the next meeting.

Item 18 ANY OTHER BUSINESS

18.1 A meeting was held under the Chairmanship of Shri Vikas Dogra, Director, Ministry of Heavy Industries on 10th November 2023, Friday at 11:00 Hrs in Udyog Bhawan in Office of Dir(VD) regarding the Electrical Transformer Quality Control Order 2015.

In this meeting, BIS was requested to revise the outdated or old standards and also to make standards for the transformer categories where standards are not available, as per current technology trends.

Following table refers the list of categories and Indian standards available.

The committee thoroughly reviewed the list and provided the comments/decisions to work going on/need of standards etc.

Status of Indian Standards available for various transformer categories

Sl. No.	Category	Indian Standard exists	Indian Standard No.	Title	Type of standard	Remarks	Status
1	Power Transformer	Yes	IS 2026 (Part 1) : 2011	Power transformers: Part 1 general (Second Revision)	General Specification	Power transformer has a series of standards. Other IS 2026 parts may also be referred. It is a general specification. However, it can be taken as a base standard for all transformers as defined in the scope.	NA
2	Distribution transformer	Yes	IS 1180 (Part 1 and 3)	Outdoor/Indoor Type Liquid Immersed Distribution Transformers Up to and Including 2500 kVA, 33 kV — Specification	Product specification	IS 1180 (Part-1) is already under QCO.	Revision of 1180 (Part-1 and 3) is under process.
3	Dry type transformers	Yes	IS 2026 (Part 11) : 2021 IEC 60076-11 : 2018	Power Transformers Part 11 Dry-Type Transformers	General specification	IS 1180 (Part 4) Outdoor/ Indoor Type Distribution Transformers — Specification Part 4 Dry	Draft is approved for Wide circulation with minor changes.

						Type" is under preparation.	
4	Inverter duty Transformers	No	NA	NA	NA	This type of transformers are covered in Solar transformer draft standard)	Draft is approved for Wide circulation with minor changes.
5	Traction transformers	No	NA	NA	NA	NA	Locomotive application Covered in RDSO. IS 2026-1 covers track side application. No additional standards needed to be formulated by BIS.
6	Instrument transformers	Yes	IS 16227 Series, IS 60044 Series	Instrument transformers	Product Specification	-	IS 16227 (Part 1) is under revision.
7	Transformers for static Converters	No	NA	NA	NA	NA	IEC standards exists. IEC 61378 series. Review of the series is under process for adoption.
8	Starting transformers	No	NA	NA	NA	NA	There is no need to formulate standard on the subject as of now.
9	Testing transformers	Yes	IS 13956 : 1994	Testing transformers - Specification	Product specification	This standard is under revision	Draft is under preparation.
10	Welding transformers	No	NA	NA	NA	NA	There is no need to formulate standard on the subject as of now.

11	Earthing transformers	Yes	IS 2026 (Part 6) : 2017, 60076-6 : 2007	Power transformers: Part 6 reactors	Product Specification	-	There is no need to formulate standard on the subject as of now.
12	Mining transformers	Yes	IS 11333:1985; IS 2772:1982.	Specification for flameproof dry type transformers for use in mines; Specification for non - Flameproof mining transformers for use below ground	NA	NA	These standards are under review by ETD 22.
13	Transformers for solar, wind power application;	Yes (for Solar power application)	IS 2026 (Part 16) : 2018 IEC 60076-16:2011	Power transformers: Part 16 transformers for wind turbine applications	Product specification	Indian Standard of Solar transformer is under preparation.	Draft is approved for Wide circulation with minor changes.
14	Transformers for railways	No	NA	NA	NA	NA	Locomotive and other applications standards covered in RDSO. No additional standards needed to be formulated by BIS.
15	Furnace transformers	Yes	IS 12977 : 1990	Arc furnace transformers specification	Product specification	This standard is under revision.	Draft is under preparation.
16	Rectifier transformers (convertor transformer)	No	NA	NA	NA	NA	IEC standards exists. IEC 61378 series. Review of the series is under process for adoption.

17	Dual ratio in primary/secondary windings transformers	Yes	IS 2026 (Part 1) : 2011	Power transformers: Part 1 general (Second Revision)	NA	NA	Covered in IS 2026-1:2011
18	Transformer used for Servomotor or operated automatic line voltage correctors	Yes	IS 9815 (Part 1) : 1994	Servo - Motor operated automatic line voltage correctors: Part 1 correctors for single - Phase applications - Specification (Second Revision)	Product specification	This standard is under revision.	The draft standard is under Wide circulation stage.
19	Transformers used in Automatic Line Voltage Correctors	Yes	IS 8448 : 1989	Automatic line voltage correctors (Step Type) for domestic use - Specification (First Revision)	Product specification	This standard is under revision.	Draft is under preparation.

18.2 There being no other business, The committee decided to close the meeting after the closing remarks of the chairperson.