DISTRIBUTION TRANSFORMER STANDARDIZATION,
CERTIFICATION AND QUALITY CONTROL

An Awareness Seminar Report
(CY 2015–2017)
### Seminar Rationale

The Government of India upon consulting with the Bureau of Indian Standards (BIS) issued the Electrical Transformers (Quality Control) Order, 2014 and further modified in 2015. This order came into force with effect from 1st Aug 2015.

To spread awareness and facilitate the implementation of this order, The International Copper Association of India (ICAI) in association with BIS and generous support from the Indian Transformer Manufacturer’s Association (ITMA) as well as nationwide transformer OEMs organized seminars across 6 cities. The capacity building effort was further supported by Central Electricity Authority (CEA), MoP, GOI to enhance understanding of various stakeholders for improvement in power distribution.

The focal point of these seminars was Standardization, Certification and Quality Control of Distribution Transformers. The seminars served as a platform for all power distribution stakeholders to come together for addressing concerns pertaining to regulatory compliance.

### Key Objectives

- Bring all the power distribution stakeholders on one platform to discuss and resolve issues pertaining to certification of Distribution Transformers as per IS:1180 (Part-1):2014
- Educate all stakeholders about the latest quality control order, relevant standards and mandatory BIS certification/registration requirements
- Host interactive panel discussions to allow stakeholders to seek clarifications from BIS officials and Accredited Test House representatives about certification process & testing
Electrical Transformers (Quality Control) Order, 2015 and CEA Advisory Letter Snapshots

Source: Electrical Transformers (Quality Control) Order, 2015 (Dated: 07.05.2015)

Paragraph 4: Obligation for certification

1) All manufacturers of electrical transformers shall make an application to the Bureau of Indian Standards, within a period of six months from the date of coming into force of this order, if not already obtained.

2) The Bureau shall –
   - Grant license for use of the Standard Mark as per the provisions of the Bureau of Indian Standard Act, 1986 and the rules and regulations made thereunder
   - Notify any article or process of any standard industry shall conform to the Indian Standard
   - Direct the use of Standard Mark under a license as compulsory on such article or process

3) No person shall commence manufacture of Electrical Transformers specified in column (3) of the Schedule, without obtaining a valid license from the Bureau

4) Bureau shall inform to the appropriate authority of the expiry of any license or cancellation thereof for one or more of the Electrical Transformers

Paragraph 8: Compliance of directions

Every person engaged in the manufacture, storage for sale, sale or distribution of any Electrical Transformers specified in the Schedule to whom any direction is issued under this Order, shall comply with such direction
**Electrical Transformers (Quality Control) Order, 2015 (Dated: 07.05.2015)**

**SCHEDULE – List of Electrical Transformers under mandatory Bureau of Indian Standards**

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Indian Standard Number</th>
<th>Title</th>
<th>ITC (HS) Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IS:1180 (Part-1):2014</td>
<td>Outdoor type oil immersed Distribution Transformers up to and including 2500 kVA, 33kV – specification Part 1 Mineral Oil immersed</td>
<td>85043100 85043200 85043300 85043400</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a. Three-phase ratings up to and including 200 kVA both non-sealed type and selected type</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>b. Three-phase ratings higher than 200 kVA up to and including 2500 kVA both non-sealed type and sealed type</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>c. Single phase ratings up to and including 25kVA sealed type</td>
<td></td>
</tr>
</tbody>
</table>

The Quality Control order can be viewed in its entirety on BIS’ website.


Source: CEA Advisory Letter No CEA/DPD/PFA/2015/1383-1490 (Dated: 26.05.2015)

Department of Heavy Industries (DHI), under the Ministry of Heavy Industries and Public Enterprises has issued “Electrical Transformers (Quality Control) Amendment Order 2014” dated 14.11.2014 (Original notification published vide Gazette of India Notification No. 2016 dated 27.01.2014)

Website reference: [http://dhi.nic.in/Notification_Transformer_Quality_Control.pdf](http://dhi.nic.in/Notification_Transformer_Quality_Control.pdf) which mandates BIS certification (i.e. IS marking on the product) as per IS:1180 (Part-1):2014 and thus no stakeholder (manufacturer and user) shall manufacture, sell or distribute and Distribution Transformer that does not conform to the specified Indian Standard i.e. IS:1180 (Part-1):2014

Notification from BIS (Central Marks Department – 3) dated 07.10.2016 can be accessed here - [http://www.bis.org.in/qazwsx/sti/Revised_STI_1180_07102016.pdf](http://www.bis.org.in/qazwsx/sti/Revised_STI_1180_07102016.pdf)
Seminar Location: Delhi

Venue
Magnolia, India Habitat Centre, Lodhi Road, New Delhi

Total Attendance
100+

Audience Profile
Top BIS officials, members of ITMA, IEEMA representatives and representatives from recognized test houses and power distribution utilities

Key Attendees
- Chief Guest – Mr. M. J. Joseph, Director General (BIS)
- Guest of Honor – Mr. B. N. Sharma, Joint Secretary (Ministry of Power)
- Mr. Anil Aggarwal, President (ITMA)
- Mr. Prakash Bachani, Scientist–ETD (BIS)
- Mr. J. C. Arora, Dy. Director General (BIS – Standardization)
- Mr. K. Anbarasu, Dy. Director General (BIS – Certification)
- Mr. Sanjeev Ranjan, MD (ICAI)
- Mr. Vikrant Joshi, Convener (IEEMA – Transformer Technical Committee)

Presentation Topics

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<th>Topics</th>
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<tbody>
<tr>
<td>Distribution Transformer Standards and Certifications as per IS:1180 (Part 1) 2014</td>
<td>Mr. Prakash Bachani, Scientist–ETD (BIS)</td>
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<tr>
<td>Quality Assurance of Distribution Transformers – Testing, Failure Analysis, and Improvement in Design and Performance</td>
<td>Mr. M. K. Wadhwani, Joint Director (CPRI)</td>
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<tr>
<td>Presentation on Distribution Transformers</td>
<td>Mr. Ashok Kumar Rajput, Director (CEA – DPD)</td>
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<tr>
<td>Reliability &amp; Efficiency of Distribution Transformer (Global Perspective)</td>
<td>Mr. Mayur Karmarkar, Regional Director (ICAI)</td>
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<tr>
<td>Reliability &amp; Efficiency of Distribution Transformer (Utility Perspective)</td>
<td>BRPL Representative</td>
</tr>
<tr>
<td>Reliability &amp; Efficiency of Distribution Transformer (Manufacturer Perspective)</td>
<td>IEEMA Representative</td>
</tr>
</tbody>
</table>
Discussion Highlights

- BIS certification should be granted based on routine /acceptance tests conducted at the manufacturers works during inspection by BIS authority.
- Manufacturers already registered with BEE should be granted BIS license straight away. This will harmonize the procedures on either side.
- BIS has come out with a Tatkal Licensing Scheme for products covered under mandatory certification. In ITMA’s opinion this will create an uneven playing field amongst the manufacturers. Hence this scheme should kindly be dropped.
- All licenses may be granted within a period of 30 days. This will help in arresting malpractices, if any.
- To extend the due date of implementation of Quality Control Order suitably as it is not feasible to implement the Quality Control Order with effect from 1st February 2015, when none of the licenses have been issued by BIS till date.
**Seminar Location: Vadodara**

**Presentation Topics**

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</table>
| Distribution Transformer Standards and Certifications as per IS:1180 (Part 1) 2014 | Mr. Shrikant Palkar, Scientist (BIS, Gujarat)  
Mr. Sumeet Bhardwaj (BIS, Gujarat) |
| Quality Assurance and related issues for testing of Distribution Transformers | Dr. Chetwani (ERDA)  
Mr. Mishra (ERDA) |
| Reliability & Efficiency of Distribution Transformer (Utility Perspective) | Mr. P N Vyas, EE (PGVCL) |
| Reliability & Efficiency of Distribution Transformer (Manufacturer Perspective) | Mr. Bagadia – Low Loss Products Pvt. Ltd. |

**Discussion Highlights**

During the interactive panel discussion, various issues with respect to certification process & testing were clarified by the BIS officials and representatives from ERDA test house.

**Seminar Location: Chennai**

**Venue**

TANGEDCO’s conference hall.

**Total Attendance**

45

**Audience Profile**

Regional BIS officials, manufacturers of Distribution Transformers and representatives from ERDA (Test Houses) and Power Utilities of TANGEDCO.

**Key Attendees**

- Chief Guest – Mr. Trinadh Kothapalli, Scientist (BIS, Chennai)
- Mr. N. Visweswara Reddy, VP (ITMA – SOUTH ZONE), MD (SHIRDI SAI ELECTRICALS LTD)
Seminar Location: **Chennai**

**Presentation Topics**

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<td>Quality Assurance and related issues for testing of Distribution Transformers</td>
<td>CPRI Representative</td>
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<tr>
<td>Reliability &amp; Efficiency of Distribution Transformer (Utility Perspective)</td>
<td>TANGEDCO Representative</td>
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<tr>
<td>Reliability &amp; Efficiency of Distribution Transformer (Manufacturer Perspective)</td>
<td>Mr. N. Visweswara Reddy VP (ITMA - SOUTH ZONE)</td>
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</tbody>
</table>

**Discussion Highlights**

Senior Officials at SE and CE levels of TANGEDCO from Purchase, Betterment, and Maintenance gave assurances on the implementation of IS:1180 (Part 1):2014 standards in their specifications. They gave their commitment to persuade supply channel members to get themselves self-registered with BIS for certification to abide by the Quality Control Order on transformers.

Seminar Location: **Hyderabad**

**Total Attendance**

18

**Venue**

Hotel Golconda, Masab Tank

**Audience Profile**

Regional BIS officials, manufacturers of Distribution Transformers and ITMA members

**Key Attendees**

- Ms. Sattu Savitha, Scientist – C (BIS)
- Mr. T. Satyanarayana, CEO (SSE Ltd), VP South (ITMA)
- Mr. Hemanth Kumar, Chief Manager (ICAI)
Presenta/g415 on Topics

Seminar Loca/g415 on:

Hyderabad

Topics Presenters

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<tr>
<td>Distribution Transformer Standards and Certifications as per IS:1180 (Part 1) 2014</td>
<td>Ms S Savitha, Scientist-C (BIS, Hyderabad)</td>
</tr>
<tr>
<td>Reliability &amp; Efficiency of Distribution Transformer</td>
<td>Mr. Hemanth Kumar, ICAI</td>
</tr>
<tr>
<td>Distribution Transformer Issues and Challenges</td>
<td>Mr. T. Satyanarayana, CEO (SSE Ltd)</td>
</tr>
</tbody>
</table>

Discussion Highlights

- Toshiba requested removal of clause 5 (Grant and License) from the BIS guidelines for certification. They also stressed that there is no need to test all transformers for type test, the number would be 636 transformers, covering all ratings and voltage class as per IS:1180.
- Participants wanted to know if insulation could be done in-house. For which BIS replied that it had to be through a third party NABL approved test house.
- ITMA members sought respite from having to comply with mandatory certification requirements by both BIS and BEE for Distribution Transformers.
- As utilities are biggest procurers of distribution transformers, it was concluded that transformers purchased in the future should conform to star ratings and energy efficiency levels mentioned in IS:1180 (Part 1) 2014.
- Disparities among state distribution companies related to standardization were discussed at length.

Seminar Location: Chandigarh

Venue

Hotel Hometel, Chandigarh

Total Attendance

60

Audience Profile

Regional BIS officials, manufacturers of Distribution Transformers and representatives from various Power Utilities of Chandigarh, Punjab, J&K, HP and Haryana

Key Attendees

- Chief Guest – Mr. AK Saini, DDGN (BIS, Chandigarh)
- Mr. Hemanth Kumar, Chief Manager (ICAI)
- Mr. Manmohan Passi, Dy-CE (PSPCL)
- Mr. Pardeep Agarwala, VP Central (ITMA)
Seminar Location: Chandigarh

Presenters topics

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<tr>
<td>Distribution Transformer Standards and Certifications as per IS:1180 (Part 1) 2014</td>
<td>Ms. Praveen Kumar, Scientist-D (BIS, Chandigarh)</td>
</tr>
<tr>
<td>Reliability &amp; Efficiency of Distribution Transformer</td>
<td>Mr. Hemanth Kumar, ICAI</td>
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<tr>
<td>Quality Assurance and related issues for testing of Distribution Transformers</td>
<td>Mr. Kapil J. Sharma, Sr. Engineer (ERDA)</td>
</tr>
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Discussion Highlights

- Participants were made aware that PD test on DT should be done
- It was emphasized that standardization of tank sizes for various DTs is a must
- Manufacturers were urged to support utilities on in-house inspections and trainings
- It was suggested by utility officials that Power Transformers should also be considered for mandatory certification for few ratings (At least up to 40MVA)
- ITMA members felt that double certification of BIS & BEE should be avoided.
Seminar Location: Kolkata

Venue
Hotel Pride Plaza, Salt Lake

Total Attendance
100+

Audience Profile
Regional BIS officials, manufacturers of Distribution Transformers, representatives from recognized test houses and power distribution utilities

Key Attendees
- Chief Guest – Mr. Rajesh Pandey, IAS, CMD (WBSEDCL)
- Guest of Honor – Mr. D. Goswami, Head (ETD)
- Mr. Rakesh Kumar, Scientist-F (DDGE) (BIS, Kolkata)

Seminar Location: Kolkata

Presentation Topics

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<td>Certification of Distribution Transformers as per IS:1180 (Part 1) 2014</td>
<td>Ms. Ishita Dalal, Scientist-B (BIS, Kolkata)</td>
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<tr>
<td>Distribution Transformers Standards</td>
<td>Mr. Debdas Goswami, Electrotechnical Head (BIS)</td>
</tr>
<tr>
<td>Distribution Transformers Practices in CESC</td>
<td>Mr. Bratin Banerjee, Dy. Manager (CESC Ltd)</td>
</tr>
<tr>
<td>Distribution Transformers – Energy Efficiency &amp; Reliability</td>
<td>Mr. Hemanth Kumar, Chief Manager (ICAI)</td>
</tr>
<tr>
<td>Transformer Test Facility at ERDA</td>
<td>Mr. Kapil Sharma, Head of Section – Transformer Testing (ERDA, Vadodra)</td>
</tr>
<tr>
<td>Facilities Available for Transformer Testing at NTH, Ghaziabad</td>
<td>Mr. Kapil Sharma, Head of Section – Transformer Testing (ERDA, Vadodara)</td>
</tr>
<tr>
<td>Reliability &amp; Efficiency of Distribution Transformer from WBSEDCL Perspective</td>
<td>Mr. Abhijeet Banerjee, Mr. P. P. Roy, Addl. Chief Engineer (West Bengal State Electricity Distribution Company Ltd)</td>
</tr>
<tr>
<td>Certification Overview</td>
<td>Mr. P. Panda, Sc. ‘F’ &amp; HKKO (BIS, Kolkata)</td>
</tr>
<tr>
<td>Testing facilities at CPRI</td>
<td>Mr. Swaraj Kumar Das, Joint Director (CPRI)</td>
</tr>
</tbody>
</table>
Discussion Highlights

It was made clear to all the stakeholders that Quality Control Order on Distribution Transformers as per IS:1180 (Part 1):2014 has been imposed and it shall not be extended or withdrawn, as such whoever has not yet got the BIS certification, should apply for the same without delay.

Audience Profile
Regional BIS officials, manufacturers of Distribution Transformers, representatives from recognized test houses and power distribution utilities

Key Attendees
- Chief Guest – Iqbal Singh Bains, IAS, Addl. Chief Secretary Energy, Govt. of MP
- Guest of Honor – Priti Bhatnagar, Scientist – E & Head (BIS, Bhopal)
Seminar Location: Bhopal

Presentation Topics

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<tr>
<td>Certification of Distribution Transformers as per IS : 1180 (Part 1) 2014</td>
<td>Ms. Priti Bhatnagar, Scientist – E &amp; Head(BIS, Bhopal)</td>
</tr>
<tr>
<td>Energy Efficiency and Reliability of Distribution Transformers</td>
<td>Mr. Manas Kundu, ICA-India</td>
</tr>
</tbody>
</table>

Total Attendance
60+

Audience Profile
Regional BIS officials, manufacturers of Distribution Transformers, representatives from recognized test houses and power distribution utilities

Key Attendees
- Shri. Puru Gupta, IAS, Managing Director, APDCL, Guwahati, Assam
- Shri. Amit Roy, Director/Scientist & Head BIS, Guwahati
- Shri. M.K. Deb, Managing Director, Prag Electricals Pvt. Ltd, Guwahati
### Seminar Location: Guwahati

#### Presentation Topics

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<tr>
<td>Energy Efficiency and Reliability Of Distribution Transformers</td>
<td>Mr. Manas Kundu, Director, International Copper Association India</td>
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<tr>
<td>Indian Standard IS 1180(PART –I)2014 Distribution Transformers</td>
<td>Mr. S. Dhar, Jt. Director BIS, Guwahati Unit</td>
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<tr>
<td>Certification of Distribution Transformers as per IS 1180 (Part-1)2014-Quality Control Order on Electrical</td>
<td>Mr. S. Dhar, Jt. Director BIS, Guwahati Unit</td>
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<tr>
<td>Testing facility of Distribution Transformers at NTH</td>
<td>Mr. Yogesh Singh, Scientist SB(Electrical), NTH, Kolkata</td>
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<tr>
<td>Manufacturer perspective for BIS Certification and Energy Efficiency of Distribution Transformers</td>
<td>Mr. Md.F Murshed, Voltamp Transformers, Limited, Guwahati Branch</td>
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<tr>
<td>Testing facility of Distribution Transformers at CPRI</td>
<td>Mr. Pranav Parikh- Mgr BD c/o Mr. Rajib Chattopadhyay, Head- BD, ERDA, Vadodara</td>
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<tr>
<td>Energy Efficiency of Distribution Transformers as per Notification dated 16-12-16, BEE and its Star and Labelling Programme.</td>
<td>Mr. Manjeet Singh, Project Engineer , BEE</td>
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<tr>
<td>Utilities Perspective in Eastern Region</td>
<td>Mr S Bhattacharya – GM Construction / Mr. Bratin Banerjee, Mgr CESC, Kolkata</td>
</tr>
<tr>
<td>REC’s View on Standardization of Specification for Distribution Transformers for DDUGJY Projects and availability of level II DTs for the projects.</td>
<td>Mr. Ranjit Ranjan, Dy. General Manager REC</td>
</tr>
</tbody>
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### Seminar Location: Jaipur

#### Total Attendance

- 90+

#### Audience Profile

- Regional BIS officials, manufacturers of Distribution Transformers, representatives from recognized test houses and power distribution utilities

#### Key Attendees

- Shri. R.K. Shrivastava Managing Director, Rajasthan Urja Vikas Nigam Limited, Energy Department, Government of Rajasthan
- Shri Naveen Arora, Director Technical Jaipur Vidyut Vitran Company Limited
Seminar Location: **Jaipur**

**Presentation Topics**

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<td>Mr. Shyam Kumar Doon, Scientist Electrotechnical, BIS, New Delhi</td>
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<tr>
<td>Certification Of Distribution Transformers As Per Is 1180 (Part-1)2014-Quality Control Order On Electrical Transformers.</td>
<td>Mr. D Goswami, Scientist-F &amp; Head The Head Bis, Jaipur</td>
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<td>Testing facility of Distribution Transformers at NTH</td>
<td>Mr. Yogesh Singh, Scientist Sb Divisional Head Electrical, NTH, Ghaziabad</td>
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<td>Manufacturer perspective for BIS Certification and Energy Efficiency of Distribution Transformers.</td>
<td>Mr. Amit Gupta, Chief Executive Officer Dausa Transformer Udhyog (P) Ltd Jaipur</td>
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<td>Testing facility of Distribution Transformers at CPRI</td>
<td>Shri Bm Mehra, Additional Director STDS CPRI Bhopal</td>
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<tr>
<td>Utilities Views on Standardization Of Specification Of DTS as Per IS: 1180 Part-I/2014 And BIS &amp; BEE Certification</td>
<td>Representative of Chief Engineer (MM) Jaipur Vidyut Vitrin Nigam Ltd,Jaipur</td>
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<tr>
<td>Testing facility of Distribution Transformers at ERDA</td>
<td>Mr. Navajyoti Roy, Bd, Mr. Kamlesh Kayastha (CRM) (BIS), ERDA, Vadodara</td>
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<tr>
<td>Utilities Perspective For Best O &amp; M Practices And Being Adopted At Bharatpur And Kota City In Rajasthan.</td>
<td>Mr. Susobhan Bhattacharya, DGM CESC, Kolkata</td>
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**Venue**

Hotel Fortune Select Metropolitan

**Total Attendance**

150

**Audience Profile**

Regional BIS officials, manufacturers of Distribution Transformers, representatives from recognized test houses and power distribution utilities

**Key Attendees**

- Shri. S Bhowal, Scientist E & Head, BIS, Hyderabad
- Shri. C Shekar Reddy, CMD, CSR Estates Ltd.
- Shri. Ismail Ali Khan, Chairman, Telangana State Electricity Regulatory Commission
- Shri. D Prabhakar Rao, CMD (FAC) Transmission Corporation of Telangana
- Shri. Ajay Mishra, IAS, SPL. Chief Secretary, Energy, Telangana
Seminar Location: **Hyderabad**

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<td>Indian Standard IS 1180(Part -1)2014 Distribution Transformers</td>
<td>Shri. Shyam Kumar, Scientist BE(ETD), BIS, New Delhi</td>
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<td>Role Of Distribution Transformers in ECBC Compliance</td>
<td>Shri. M Dhakate, Director(PFA M/DP &amp; D)</td>
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<td>Testing Facility of Distribution Transformer at CPRI</td>
<td>Shri. D K Grover Additional Director &amp; Unit Head UHVRL, CPRI, Hyderabad</td>
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<tr>
<td>Certification of Distribution Transformers as Per IS 1180 (Part 1) 2014 - Quality Control Order on Electrical Transformers</td>
<td>Smt. Sattu Savitha, Scientist-C, BIS, Hyderabad</td>
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<td>Manufacturer Prospective for BIS Certification and Energy Efficiency of Distribution Transformers</td>
<td>Shri. CH Rambabu, Gm, Marketing, Shirdisai Electricals Ltd.AP</td>
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**Crucial role of transformers in power distribution**

The International Copper Association India conducted a workshop on Standardization, Certification & Quality Control of Distribution Transformers in New Delhi on January 9, 2015. The two-day event was organized in association with the Indian Standards Institution (ISI), the Indian Transformer Manufacturers Association (ITMA) and the Indian Electrical & Electronics Manufacturers Association (IEEMA).

**Seminar on Standardization, Certification & Quality Control of Distribution Transformers**

The International Copper Association India organised a seminar on Standardization, Certification & Quality Control of Distribution Transformers in City, February 2016. The seminar, the event was well attended by leading manufacturers and importers of Distribution Transformers. The seminar was attended by leading manufacturers and importers of Distribution Transformers.

**Media Coverage**

![Image of seminar participants and speakers discussing the importance of transformers in power distribution.](image-url)
1. **Is the Quality Control (QC) Order on electrical transformers dated 7th May 2015, applicable for utilities, Govt. projects like CPWD, MES, Building, etc and for private sectors also?**

As per clause no 03 of quality control order, No person shall by himself or through any person on his behalf manufacture or store for sale, sell or distribute any electrical transformers specified in this order, which do not conform to the specified standards and do not bear standard mark of bureau, on obtaining certification marks licence – As such Quality Control Order is applicable to all.

2. **The orders/tenders which are under execution and committed deliveries of Transformers are beyond the date of implementation August, 15, how this gazette will be applicable?**

DHI has already extended the date of implementation of the quality control order of DTs as per IS:1180 Part 1/2014, twice to accommodate the supplies/deliveries against the orders under execution and has finally made it effective w.e.f. 1st February 2016. The gazette applies with prospective effect hence retrospective will not be applicable, Certification has been made applicable from 1st February 2016.

3. **Is it possible to manufacture Non-BIS Transformers after getting BIS certification?**

As the product is under mandatory certification, it cannot be manufactured without ISI mark and BIS Certification.

4. **What will be the charges for BIS Stamping/marking Is it applicable for total turnover of the company or for BIS Rating Transformers?**

For marking fee details, please refer BIS website, however it has been kept as Rs 3/KVA.

5. **If customer wants to purchase Transformer as per their specification, can we manufacture and supply? (without BIS Stamp)**

No; customer can not specify any deviation from IS 1180 Part 1/2014 due to its mandatory certification (Except if the transformer is meant for export outside India - as per clause no 03 of quality control order) OEM should make effort in informing him about the mandatory nature of the standard which put DTs under BIS certification.

6. **If customer asks for different tapping range and impedance maintaining losses as per IS 1180, then certification will be valid or not?**

No, if the customer asks, the OEM should inform him about the standard and its mandatory nature. Hence there is no possibility of specifying different tapping range and impedance other than specified in standard. However an Amendment No. 1 in IS:1180 Part 1/2014 has been issued by BIS.

**Disclaimer:** The above listed FAQs are based on interactive answers given by various experts, BIS technical committee members and certification officials. These are meant for representation purpose only. Although truthful endeavour has been made to give factual insights, we strongly advise you to seek official response from concerned authorities. Neither ICA, nor ITMA takes legal responsibility if these answers are taken at face value.
in August 2016, which allows the provision of any other tapping range and tapping steps subject to generally agreed between the purchaser and the manufacturer i.e. user and the supplier as per Cl: 6.7.4 & Cl: 7.7.4 of the standard.

7. What will be the validity of Licence / Certificate?
Licence is initially granted with a validity for one year which is required to be renewed further.

8. How much DTs ratings will be required to get certified for BIS? If one gets certification for higher rating of DTs whether all below ratings shall be considered as certified?
PI refer to grouping guidelines available in BIS website and latest BIS guideline for certification issued by BIS, in June 2016, based on these guidelines lower rating of DTs are considered to be certified on the basis of the group having been tested & certified by BIS.

9. How BIS will communicate the implementation of the order to the industrial customer? Till date lot of manufactures are not aware about the Gazette and very few customers are aware?
Several awareness programme are being undertaken to spread the message by the ITMA & ICAI by conducting awareness workshop at various cities in India. BIS is also involved in these awareness campaign.

10. What are the steps followed for certification and how do I apply?
Please visit BIS web site at www.bis.org, to know basic guidelines regarding certification process. Application to be submitted at the concerned BIS office located near your factory location.

11. What is procedure after application and where do I send samples for testing?
Application for certification is to be made with the respective office of BIS and after preliminary inspection (PI) at the works of the applicant by BIS, the sample of DTs are sealed by BIS and sent for testing in its approved test house i.e. CPRI, ERDA, and NTH, etc. by BIS.

12. Once we apply for certification, can we sale non-BIS Transformer till certification?
No; transformer can only be supplied with BIS certification mark (ISI mark) after getting approval from BIS. As per QC order, effective date of implementation is 01.02.2016. Please refer latest guideline, which require supply / manufacture of BIS certified/ marked DTs mandatory after 1st February 2016.

13. What are the efficiency levels in Distribution Transformers? As per IS 1180 clause 6.8 / 7.8 / 8.8 there are three levels of energy efficiency defined as level 1, level 2 and level 3.

14. What exactly does the QC order speak and how is it applicable to manufacturers?
Please refer to Q at Sr 1 above in this table, the quality control order has been effective from 1st February 2016 as such as per para 3 of the order, one can not manufacture / supply DTs without BIS mark.

15. How is the end user benefited by using the best energy efficient Transformer?
Revised IS 1180 Part 1/2014 is relevant for EE DT. End user benefits by consuming less energy for same output, thus reducing his energy consumption and electricity bill. Further he is assured of the Quality of the Distribution Transformers due to 3rd party certification i.e. ISI marked; thus the continuity of uninterrupted quality power supply is ensured.

16. What is new in revised IS 1180 – 2014 version?
Distribution Transformer Industry in the country has progressed a lot over the years. In recent times, conservation of energy has assumed importance and minimum energy performance standards for distribution transformers right up to 2500 kVA 3 phase ratings as well as single phase distribution transformers up to 25 kVA has been specified in certain regulation. This created a need to harmonise the standard with other mandatory regulations and existing provisions in the country.

This standard recommends multiple rating with regard to Energy Efficiency that is, three energy efficiency levels: level 1, level 2 and level 3 of transformers corresponding to 3 star, 4 star and 5 star labelled transformers respectively, as prescribed by BEE. It is expected that transformers shall conform to at least energy efficiency level 1. In due course of time with improvements in technology and materials, higher levels of energy efficient transformers shall be progressively used. During this revision scope of both existing standards Part 1 and Part 2 of 1989 have now been clubbed to make one combined standard for distribution transformer and designated as IS 1180 (Part 1)/2014. With the publication of this standard, IS 1180 (Part 2) of 1989 would be withdrawn. In this revision maximum losses at 50 and 100 percent loading have been incorporated with the energy efficiency level 1, 2 & 3 and the scope is extended up to 2 500 kVA. Further, single phase high voltage (11 to 33 kV) distribution transformers up to 25 kVA rating, have also been included to make it a comprehensive standard on Distribution Transformers.

Further MoP vide notification dated 16th December 2016 has issued an Amendment to its earlier notification dated 12th January 2009 by up-rating the star levels i.e. star 4 of 2009 notification has been made as star 1 in 2016 notification & so on...... upto star 5 ratings.
BIS has also considered in its Technical Committee meeting held on 19th March 2018 to clearly specify the same, in BIS standard IS: 1180 part 1 as Energy Efficiency level 1 to 5 corresponding star 1 to 5.

17. Why government does not make it mandatory to buy only highest star labelled DT?
The IS have been revised to accommodate various levels of EE and customer is given choice for EE levels within a standard framework. Government, in response to climate change challenge, is committed to promote energy efficiency and reduce energy intensity in the economy. Further Govt. has made it mandatory to purchase Energy Efficiency Level 1 or BEE’s Star 1 distribution transformers, and as shall move on to the higher Energy Efficiency Levels or star rating progressively by giving sufficient time to switch over, with the improvement in technology and the available material in the market.

18. From utility perspective, why should the DT fail when all my parameters are in controlled limits?
DT failure can be due to varieties of reason since there are various parameters involved. There could be reasons of poor installation, restricted O&M practices or even electrical fault. Controlling parameters is just one element for getting best out of important assets like DT.

19. What are the functions and associated performance standards of the transformer in its present operating context?
IS 1180 has been revised in July 2014 and further on the basis of experience gained Technical Committees amended it through issue of an amendment No. 1 in August 2016. This standard, if studied in detail, gives answer to questions raised.

20. Is there any proposal to incorporate the requirements of Internal Circuit Breaker in IS 1180 (Part 1) : 2014?
BIS has received earlier comments from the stakeholders that IS 1180(Part 1): 2014 does not specify the requirement of Internal Circuit Breaker. Accordingly a draft amendment in standard to incorporate Internally/Externally mounted Circuit Breaker is under deliberation and technical investigation. BIS in its Technical Committee meeting of ET-16 decided to include the requirement of Internal Circuit Breaker in IS:1180 Part 1/2014 as an appendix or the annexure, and has also finalized the requirement and set of tests to conduct to certify the prudence. Both the Test Houses CPRI and ERDA agreed to conduct the test as prescribed, the sample of DT’s with Internal Circuit Breaker (ICB) tested to confirm the prudence of parameters fixed during the meeting through tests at the Test Houses. Both the test houses confirm the prudence of testing facilities and capability for the Special test for Transformers with ICB. Technical committee ETD-16 shall consider the matter further for approval of ICB in DTs standard IS:1180 Part 1/2014, in its next meeting after looking at the test result conducted on the samples as prescribed by the committee.

21. Does the Existing IS 1180-1(2014): A) Cl. No. 1 : Scope : – also covers certain categories of special transformers such as
i. Inverter duty transformers
ii. Traction transformers
iii. Instrument transformers
iv. Transformers for static converters
v. Starting transformers
vi. Testing transformers
vii. Welding transformers
viii. Furnace transformer
ix. Earthing transformers etc.
The scope (Cl. 1.0) of IS 1180 defines what kind of transformers are covered. There are separate standards for most of these special transformers. The standard is meant for Distribution Transformer as defined in clause 3.1 as amended from time to time. The Special Transformer as mentioned in the amendment No. 1 of the IS: 1180 issued in August 2016 are not covered in the Scope of the IS 1180 /Part I/2014.

22. Considering Cl. No. 6.1.7.1.8.1: Standard ratings it is known that 750 kVA, 800 kVA, 950 kVAand 990 kVA ratings are also being used extensively in Indian Market and hence are these ratings also included in the list of standard ratings along with relevant technical parameters (Losses, Impedance, etc.) Losses & Impedance for non-preferred ratings may also need to be defined by considering BEE / CEA guidelines?
BIS certification of transformers shall be only for standard ratings given in the IS:1180 Part 1/2014. Use of nonstandard ratings should be stopped/discontinued. The standard ratings given in the standard have been arrived after detailed discussions. There is no end to the additional ratings as per the requirements of the customer. IEC standard has also specified standard ratings. However the following ratings have been included in the IS: 1180 Part-1/2014 through an amendment No. 1. For Single Phase ratings -50, 75 & 100 KVA and in 3 Phase ratings 6.3,10,20,40 & 800KVA.

23. Please make the standard in line with BEE and CEA guidelines, as these three specifications serve

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In fact, BEE and BIS efficiency related provisions are harmonised; only difference is nomenclature used. As far as CEA guidelines it is policy advisory that refers to IS 1180-1 (2014) standard as updated from time to time which is latest standard. So one need to refer to latest IS 1180 provisions.

24. As per clause 7.10.2: The permissible temp. rise limit shall not exceed 45°C for wdg. & 40°C for oil – please clarify?

IS 1180 (Part 1): 2014 specifies limits of temperature rise for transformer winding and top oil in order to ensure healthy functioning of the transformer which are given here under:

<table>
<thead>
<tr>
<th>Transformer class</th>
<th>Limits for temperature rise</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 phase transformers upto and including 200 KVA</td>
<td>For transformer winding - 40°C (when measured by resistance method) For top oil - 35°C (measured by thermometer)</td>
</tr>
<tr>
<td>3 phase transformers higher than 200 KVA and upto and including 2500 KVA</td>
<td>For transformer winding – 45 °C (when measured by resistance method) For top oil – 40°C (measured by thermometer)</td>
</tr>
<tr>
<td>Single phase transformers upto and including 25 KVA</td>
<td>For transformer winding – 40°C (when measured by resistance method) For top oil - 35°C (measured by thermometer)</td>
</tr>
</tbody>
</table>

25. Whether manufacturers can deviate from the values given in Table 6 of IS 1180: 2014 for % impedance as cl. 7.8.2 uses the word ‘recommended percent impedance’. Also, if they can deviate, how maximum total losses will change for different energy levels?

No, recommended percent impedance is guideline for user to specify. Once it is specified either the standard value of losses or any other value, same is to be met with within tolerance as specified in IS 1180 (Part 1) – 2014.

26. Whether manufactures can deviate from Off Circuit Tap changer voltage variation range as customers are asking for different ranges?

As per the amendment No. 1 to IS :1180 Part-1/2014 issued in August 2016 , under Cl:6.7.4 and Cl: 7.7.4 the provision of any other tapping range and tapping steps is subject to mutually agreed by the purchaser and the manufacturer i.e. user and the supplier.

27. Suggestion to increase number of tap positions due to problems arising in designing may be considered?

Amendment NO. 1 to IS:1180 part1/2014 permits vide clause 6.7.4 “any other tapping range and tapping steps is subject to a agreement between user and the supplier” which allows change in tapings range given in IS:1180 Part 1/2014.

28. Please give clarifications on Whether Special Tests mentioned at Section 21.4 are to be carried out by default?

Special tests are subjected to mutual agreement between the user and supplier and when specified are to be done on one unit. They are not to be carried out by default.

29. Clarification on how to do Pressure tests— in case pressure is measured at the top, it should be equivalent to the head that would be available at the base of the tank, but how to evaluate the equivalent head available at the base of the tank is not given in IS?

This is common industry practice. If further details are required please refer to Annex on pressure test that has been added in Amendment no 1 to IS 1180 (Part 1) in August 2016.

30. Is there any sequence to carry out the following tests: Short Circuit Routine Tests, Short Circuit withstand, Short Circuit Routine Tests, Lightning Impulse, Temperature-rise, Pressure test, Oil Leakage Test, Physical Verification?

No sequence is specified. It is only said that routine tests before & after short circuit test are conducted as per IS 2026 (Part 1). Lightning Impulse test if specified can be conducted post short circuit. This should be followed by physical verification. Temperature rise test and leakage test are done after physical verification.

31. The Gazette note on IS – 1180 Validation of Mark after warranty / repair is not addressed. If any repairs made on BIS marked transformer, the repairer may not maintain same parameters. What is the view?

Repaired transformers are not presently covered under the scope of this standard.

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### FAQs

32. Is there any further amendment proposed in IS:1180 based on the MoP’s notification dated 16th December 2016 for uprating star levels for higher energy efficiency star level DTs.

MoP vide its Notification dated 12th January 2009
Brought out the DTs at 11KV up to 200KVA ratings under the BEEs S & L Programme with Star label 1 to 5 as per IS; 1180 part I/1989 for voluntary labeling programme and in year 2010 it was brought under mandatory standard labeling and labeling programme of BEE upto 200KVA at 11KV Distribution Transformers as per IS:1180 Part-1/2014 for 11 KV voltage class.

2. MoP vide Notification dated 16th December 2016
Made an amendment to its Notification dated 12th January 2009 by uprating the Star Label i.e. making Star 4 of Notification 2009 as Star -1 in notification dated 16th December 2016 and so on. This amendment also included Distribution Transformers upto 2500 KVA rating in the ambit of BEEs S & L programme i.e. under Star Labelling as per IS:1180 Part-1/2014. This notification has been made effective from 1st July 2017. However, it has been agreed in minutes of the meeting of Technical Committee of BEE held on 12th May 2017 that the orders issued for supply of Distribution Transformers upto 30th June 2017 by the Utilities/Discoms shall be allowed to be supplied as per the old Notification of 2009, till the delivery schedule of the contracts/purchase orders is valid.

### BEE’s Energy Efficient Star Label Distribution Transformers under its S & L Programme.

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3. What will be the procedure for supply of the orders received from the private parties / turnkey project contractor
For the orders received from the private contractors for supply of DTs to group housing societies/turn key projects etc. BEE has agreed to examine these cases after the same are uploaded on the BEE’s website, as the number would be very less. The matter is under consideration of BEE after follow up from various quarters.

4. For ease of doing business BEE should accept the type test certificate considered by BIS while issuing licence/certification.
The issue was taken up with BEE and they have agreed to accept the BIS test certificate for which the manufacturers are required to submit the BIS licence along with the tests certificate to BEE with the application, while requesting for issue of star label of that particular rating.

5. BEE is taking lot of time in issuing the star label after submission of documents/application online due to unnecessarily holdup on one pretext or the other.
Issue was taken up with BEE in its technical committee meeting held on 12th May 2017 wherein this issue was highlighted and BEE stated that they are creating a portal so that the applications for star label are sent online and there is no need for hard copy of the application and the star label shall be issued on 30 days. They also agreed to stream line the procedure for submission of the applications so that unnecessary information is not asked for.
This issue was also deliberated in the Monitoring Committee Meeting on DTs on 22nd August 2017 at CEA wherein BEE’s representative confirmed that BIS type test reports shall be acceptable to BEE for the star label application and they shall grant the star label within 30 days from the date of submission of the documents/application on the online portal of BEE.

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BEE’s Energy Efficient Star Label Distribution Transformers under its S & L Programme.

6. Why Mandatory dual certification of distribution transformers by BIS and BEE for the same cause of energy efficient quality distribution transformers as per IS:1180 (2014) is pursued in India?
One of the major issues raised by ITMA and others at various forums even at the level of Hon'ble PM and the then Hon'ble Union Power Minister is regarding the multiplicity of the authorities for the same task of compliance for the energy efficiency guidelines of BIS and BEE as per IS:1180 (2014). The matter is under consideration at policy level after representation by ITMA and others for ease of doing business.

7. Uniformity of the technical specifications across the utility/discoms for procurement of distribution transformers needs to be implemented at National level.
This issue is also taken up with the then Hon'ble Union Power Minister in July 2016. Chairperson CEA was advised to get the issue resolved by calling the comments on the specifications already finalize for DDUGJY and IPDS of REC & PFC projects respectively for electrification and then have a meeting of all the stakeholders to finalize these specifications for adopting uniformly by all across the board. The comments on the specifications have been given by the associations and also by the REC.

IPDS, urban/smart cities electrification projects should adopt the uniform specifications for DTs as per CEA’s guidelines and IS:1180 Part 1/2014. It is found that many discoms/utilities/ EPC contractors are still following their own specifications resulting in multiplicity of designs etc... It is therefore felt necessary that the technical specification for DTs are standardized and uniformly adopted for all electrification projects by utilities/discoms across the country.

8. Warranty/guaranty for period of 60 to 66 months insisted by some of the discoms/utilities in the tender documents goes against the QC Order philosophy and often results in severe disadvantage to the manufacturers.
A dialogue is on so that the utilities/discoms restrict the warranty/guaranty period to standard 12/18 months or 18/24 months in the electrification contracts or the tender documents for transformers particularly for distribution transformers as per the CEA’s guidelines instead of 60/66 months being insisted upon by some of the discoms/utilities.

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Copper reduces load loss, because it is a more efficient conductor. By reducing load loss, Copper wound transformers helps increase profit margins of power distribution companies.