



MANUFACTURERS' PERSPECTIVE

STANDARDISATION, CERTIFICATION AND QUALITY CONTROL OF DISTRIBUTION TRANSFORMERS



STANDARDISATION, CERTIFICATION AND QUALITY CONTROL OF DISTRIBUTION TRANSFORMERS

The Statutory Bodies Controlling the Transformer Standardization and Quality in India:

- 1 **CEA-Central Electricity Authority**
- 2 **BEE-Bureau Of Energy Efficiency**
- 3 **BIS-Bureau of Indian Standards**
- 4 **Discoms & Utilities**
- 5 **REC-Rural Electrification Corporation**
- 6 **Ministry of Heavy Industries**



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The Concern

CEA, BEE, BIS, DISCOMs & The Utilities have different specifications

Suggestion from ITMA

Specifications, Guidelines and Manufacturing Procedures should be drawn jointly and shall be mandated for both the manufacturers and the DISCOMS/UTILITIES for implementation in Toto

The following listed parameters should be addressed



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PARAMETERS

1. **Basic Insulation Levels**
2. **Energy Efficiency Levels 1,2 or3**
3. **Flux densities and Current densities**
4. **Type of conductor – paper covered or enamel covered**
5. **Type of Insulation materials viz., electrical grade kraft paper, epoxy dotted paper**
6. **Temperature rise of Oil/Winding**

Contd.....



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PARAMETERS

- 8 Cooling methods, design and placement of radiators
- 9 Elliptical / round tubes, pressed steel radiators or corrugated
- 10 Shape of tank – elliptical / rectangular or round (in case of 1-ph trafos)
- 11 Placement of bushings – on top cover/side with pipe or pocket etc
- 12 Thickness of tank
- 13 Component losses in line with the BIS

NEED OF THE HOUR - STANDARDISATION OF SPECIFICATIONS



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It is hence recommended that

- 1 One uniform specification across the country CEA / BIS/ BEE acting as the nodal agency.**
- 2. be adopted and made mandatory for all the stake holders to follow right from tendering stage up to inspection and acceptance of the product**
- 3 Implementation of recommendations by appointed consultants M/s ABPS. jointly initiated by ITMA and BEE on qualitative improvement in manufacturing practices of distribution transformers and best O&M practices for utilities be considered**



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- 3 **As is known to all, presently Distribution Transformers up to 2500 kVA are subject to Star labeling minimum of Level 2 of BIS**
- 4 **Further it has been made mandatory to obtain BIS License for Distribution Transformers as per IS 1180:2014**
- 5 **Taking cognizance of the benefits of the electrical transformers quality control order, it is essential to avoid multiple certifications and licensing and only one certification body must be prevalent, be it BIS or BEE**
- 6 **Further provision for granting BIS license based on BEE / BEE based on BIS Approval for the ratings already registered shall be considered**



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Actions by BIS

A Seminar was held at New Delhi on 9th Jan 2015, by BIS/ ITMA /ICAI/ BEE / IEEMA, on Standardization and Quality Control of Distribution Transformers. The Seminar was successful. BIS was very receptive and gave a positive message to the manufacturers and in subsequent times following points were addressed :-

- 1 Due to lengthy & time taking process Sample selection process simplified (only 1 sample per type applied for) and License is granted after successful testing of the transformers at CPRI/ERDA
- 2 Date of implementation postponed suitably to benefit all stake holders, to avoid chaos. Date extended up to 1st Feb 2016
- 3 Rationalized the mark up fee



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ITMA's ROLE

- 1 ITMA's responsibility will be to provide level playing ground to all quality manufacturers**
- 2 ITMA will never encourage manufacturers who are not in line with the quality standards.**
- 3 ITMA will encourage only manufacturer prime quality of raw materials like CRGO / Amorphous metal/Copper/Aluminum/Oil etc.**
- 4 ITMA respect manufacturers who is having best manufacturing practices**



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While it is understood and well taken that the “Transformers Quality Control Order” is for ensuring quality, reliability and durability of the transformers, it is to be noted that the product performance depend not only on quality manufacturing practices and materials, but also on many factors post manufacturing, Viz.:

- 1 Transportation and Storage
- 2 Installation and Commissioning
- 3 Operation and Maintenance
- 4 Lack of Protection
- 5 Over Loading, unauthorized connections, 1-phase loading
- 6 Pilferage (especially oil)

“Attention of Utilities is requested”



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- * It is understood and can be seen ahead that the Installation, Maintenance Procedures being employed are not as per BIS Codes (IS 10028).
- * If the non compliance to such codes continue, all efforts of Electrical Transformers Quality Control Order for Quality Assurance would be futile and there can be rampant damage to Distribution Transformers,
- * Financial loss to the manufacturers
- * Harassment to the DISCOMS in the form of repeated faults and power outage.



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BIS CODES FOR INSTALLATION & MAINTENANCE NOT FOLLOWED





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BIS CODES FOR INSTALLATION & MAINTENANCE NOT FOLLOWED. BRANCHES FOULING WITH HT CONNECTIONS





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BIS CODES FOR INSTALLATION & MAINTENANCE NOT FOLLOWED. JUMBLED WIRES





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BIS CODES FOR INSTALLATION & MAINTENANCE NOT FOLLOWED . HT & LT WIRES CRISS CROSSING





STANDARDISATION, CERTIFICATION AND QUALITY CONTROL OF DISTRIBUTION TRANSFORMERS

BIS CODES FOR INSTALLATION & MAINTENANCE NOT FOLLOWED. LOOSE CONNECTIONS CAUSING HEATING





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BIS CODES FOR INSTALLATION & MAINTENANCE NOT FOLLOWED. HUGE SIZE OF WIRE FOR HT FUSE





**STANDARDISATION, CERTIFICATION AND QUALITY CONTROL
OF DISTRIBUTION TRANSFORMERS
BIS CODES FOR INSTALLATION & MAINTENANCE NOT FOLLOWED.
OIL LEVEL NOT MAINTAINED**





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WARRANTY

- 1** While the manufacturers are constantly striving to serve the utilities with best quality products by deploying stringent quality controls from materials thru processes, they are heavily burdened by the extraneous un conditional warranty of 5 years imposed by the utilities.
- 2** If a distribution transformer can satisfactorily function for one year withstanding the 4 seasons, the prevalent loading patterns and the network conditions it can very well give good service for quite good number of years, provided properly maintained. Any failure beyond this period can be attributed to the improper operation and maintenance practices. It is hence felt that a warranty of 12/18 months will be more than sufficient. Any warranty beyond this period will only be for covering up for the operational deficiencies



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EVEN BMW CARS DO NOT CARRY 5 YEARS WARRANTY





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Appeal from ITMA

- 1 For total Quality Management, this Quality Control Order shall be extended to all ratings and types of transformers including the Power Transformers.**
- 2 Imports of all ratings and types of transformers should also be subjected to BIS Quality Control Order. Lest the Indian soil will be flooded with substandard products at the cost of Indian manufacturers.**
- 3 We, Indian manufacturers depend on the policy makers, regulators and the utilities for our existence. We request their unconditional support to help the industry manufacture, quality, reliable and energy efficient transformers benefiting all the stake holders and the country as a whole**



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New Technologies

Utilities has to encourage new technologies. Many manufacturers are ready to develop new technologies.

For Example There was an ambiguity on use of Amorphous core and its repairability, Though we are using these type of Transformers more than 20 years.

Foil winding is one new technology which is having less eddy losses, More heat dissipation and easy to manufacture, There was a resistant to use from some of utilities.

Recently many technologies are being introduced in all over the globe, Utilities / Statutory Bodies has to encourage and these for mutually beneficial.



Thank You

