

Seminar on “Improving Reliability, Safety, Quality and Energy Efficiency in Distribution Transformers (DT) to address economic and other related issues”

- *ICA India and ITMA in support with UPPCL and DISCOMs organized seminar in the city.*
- *To create condition for the power utilities to improve reliability and energy efficiency in DTs while carrying out technical loss reduction program actively.*

Lucknow, 6 September 2019 –Distribution transformers play a major role in ensuring that electricity reaches the end users. But unfortunately a large number of DTs in India are manufactured in unorganized sector without required skill sets and often deploying questionable methods of manufacture causing premature failure or lower efficiency leading to substantial economic losses. In order to promote sustainable development in India by spreading awareness among power utilities and transformer manufacturers to adopt higher standards and update technical specifications of the transformers, The International Copper Association of India (ICA India) in association with Indian Transformer Manufacturer’s Association (ITMA), and support from the Uttar Pradesh Power Development Corporation (UPPCL), local distribution companies and Bureau of Indian Standard (BIS), organized a seminar on **“Improving Reliability, Safety, Quality and Energy Efficiency in Distribution Transformers and Other Related Issues”** in Lucknow.

Distribution Transformers (DTs) are the most important assets for any distribution network. Their reliable and proficient operation can result in long-term benefits for the power distribution utilities and its customers. However, there are high technical losses due to inadequate investments in system improvement as well as unplanned extensions of the distribution systems over past decades. As of date the distribution sector in India has been carrying AT&C loss of worth Rs.41000 crores even after the infusion of 2.5 lakh crores during the last few years through UDAY scheme. One of the reasons for the increasing trend of these losses in DTs is poor efficiency due to network, environment, unbalanced loading conditions and other field conditions. The DT failure rate in the country is soaring in the order of 12-15% (in State Utilities), as against the global average of less than 1%.

Pan India failed DTs are repaired after failure in business as usual (BAU) approach and estimated to cost the economy to the tune of INR 4000 crores per annum. Any DT failure impacts the utilities KPI of providing a reliable supply to its consumers and resultant loss of revenue. Besides the lost energy within the DT is a lost opportunity for the distribution company itself. There are no hands-on measures for DT upgrade through proactive repair as only failed DTs are sent for repair. An Active Repair, a novel concept introduced by Copper network is a preferred approach over Reactive Repair, especially for legacy DTs. These would radically reduce the failure rate and also reduce the technical losses and improve reliability Today DTs require end to end asset management approach as compared to earlier days of product approach since each DT can be treated as individual profit centre by the utilities with the help of IOT or other latest technology.

Speaking on the occasion, Mr. Manas Kundu, Director, ICA India, said “At present in India approximately 10,800 Cr to 14,500 Cr can be ascribed to technical losses due to inefficiency of Distribution Transformers across India. We believe these losses can be reduced by implementing higher

level of energy efficient standards for DTs as it will save the total cost to users by reducing energy consumption. We at ICA India are committed to collaborating with the authorities to provide the necessary platform for dialogue and discussions between various stakeholders that would yield the exchange of new technology developments and use. We hope that this seminar has helped in enhancing skill and knowledge that will help resolve the challenges related to reliability and efficiency of DTs.”

Shri Girish Kumar - Sr. Vice- President, ITMA welcomed the dignitaries and the utility engineers and expressed happiness over creating such a platform for free and frank dialogue between the utility and the OEMs to address the challenges faced by distribution companies.

UP State currently has approximately about 18 lakhs Distribution transformers with a failure rate of about 15% for the year 2018-19 and about 58% of these failures were due to faulty windings which resulted in short circuit and fire. Some of the DISCOMs are even having DT failure in the range of 25% to 35%. UP with electrification rate of 95% plus, the demand is consistently growing every year. To meet these growing electricity demands and achieve reliability in supply we need to assure better efficiency for assets like DT. ICA India has investigated the viability of reducing failures and technical losses in Distribution Transformers (DT) through Active Repair over the current Reactive Repair methods. This proposed DT Active Repair enables the Utility Organization to bring down no-load and load losses proactively. This is similar to open heart surgery for live nominated DTs. The no-load losses can be reduced up to 30% and load losses up to 40% by using copper windings instead of aluminum windings using same core window. This is a novel concept in cash starved sector and there is a strong business case for Indian DISCOMs to consider this approach.

Mr Sanjay Goel, MD, MVVNL, graced the occasion as Chief Guest. He talked about scope of improvement in the sector through proactive approach and expressed satisfaction about such knowledge sharing session on new technology and good practices adopted elsewhere. He expressed serious concerned with the high failure rate of transformers at 12%. He was interested to listen to ideas where the cost of repair can be reduced. Similar concern was raised by **Mr. Vijay Kumar, Director Distribution, UPPCL** as about Rs 400 Crs is being spent on repair of Transformers. He referred to recent steps being taken at utility to arrest such high failure and stricter quality control regime to get better product. He also assured OEM stakeholders that unbiased approach is undertaken to investigate the causes of premature failure of DTs and remedial action roadmap.

Dr. Tripathi- Retired Director General Central Power Research Institute (CPRI) talked about using technology for early diagnostics before failure of transformer. It is very important to monitor the health of existing transformers. So much money is being spent on procuring new material, but little is spent to automate our systems whereby we can reduce the failure by taking preventive action in proactive manner.

Mr. Manas Kundu, Director, International Copper Association and convener for the day with what he said, “*rather than pura ghar badal daalo, jo ghar mein hai use sudharoo.*” **Mr Vivek Goel – Chief Engineer Distribution and Planning from Central Electricity Authority (CEA) New Delhi** appraised the audience about future roadmap of India’s power sector and the thrust of present government in providing quality and reliable supply to Citizens at affordable cost. He mentioned about current focus on performance based funding from central government and accountability for standards of performance by DISCOMs. This was carried over by **Mr. Mahesh Pradhan from ecolibrium** who talked about Artificial Intelligence and Data monitoring. There is a sixth sense which can analyse the health of transformer on a real time basis.



Mr. Pradeep Azad, MD, U P Transformers (India) P Ltd., talked about the implementation Quality Control Order of Ministry of Heavy Industries by BIS and the checks that go into manufacturing of distribution transformer right from the time of purchasing of raw material till the time it is dispatched from the manufacturers premises. In spite of so much checks and testing, still there the transformers getting damaged. We cannot neglect Transportation, storage, installation, periodic maintenance of DTRs. He suggested that a common unified standard based on IS 1180 would go along way for utilities reducing their cost of tendering and procurement instead of individually prescribing Guaranteed Technical Particulars (GTP) that gives scope to dilute and deter standardization effort. **Mr. Raj Kumar Rastogi- Head Technical Services of Tata Power Delhi** shared on steps and good practices they adopted and how have they reduced the AT&C losses in Delhi from more than 25% to less than 5%. He mentioned about care and attention that DT gets at his utility and how DT failure rate today stands at below 1% after having adopted various simple steps and using only copper-based DTs. The score card report is a very good suggestion which can be applied here to fix responsibilities and ultimately to reduce the failure rate.

The key speakers at the event were representatives from BIS, ERDA, ITMA, Tata Power Delhi and several technology providers. The event was a success and was appreciated by transformer manufacturers, consultants, power utilities, and general industries using the legacy Distribution Transformers (DT). ICA India has taken up this project to advance the situation by promoting better technological options and is endorsing the use of low-loss, high-grade materials for the core and winding as well as better insulating medium like natural Ester oil to result in Safe, high Energy Efficient & reliable Distribution Transformers (EE DTs).

About ICA India:

The International Copper Association India (ICA India) is a member of Copper Alliance and the Indian arm of the International Copper Association, the leading not-for-profit organization for the promotion of copper worldwide. ICA India is driven by the same objective as that of its parent organization, which is to 'defend and grow markets for copper based on its superior technical performance and its contribution to a higher quality of life worldwide'. ICA India contributes mainly through its catalytic role, accelerating changes and transforming the long-term markets for Copper in a sustainable way through its major initiatives such as electrical safety and energy efficiency. ICA India's activities focus on helping end users to better understand and appreciate the positive attributes of copper.

About ITMA:

Indian Transformer Manufacturers Association [ITMA] a national association was established in 1979 with the objective of promoting the interest of manufacturers of Electrical Transformers and its Allied equipment's to voice the problems of the Industry with the Government of India and its PSUs viz CEA, REC, PFC, BEE, BIS, PGCIL, NTPC, NHPC, BBMB, NEEPCO, NPTI, DVC, CPRI, State Governments, State Electricity Boards, Utilities and Power Companies in the business of Generation, Transmission & Distribution of electricity. Indian Transformer Manufacturers Association (ITMA) has in its fold about 250 members located in various states of India and represents the maximum production capacity of power/distribution transformers in the country with leading transformer manufacturers on its rolls.

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