RP - Sanjiv Goenka Group
Growing Legacies

CESC LIMITED

# CESC's Perspective on Performance & Reliability of Distribution Transformers

**Bratin Banerjee**
**Susobhan Bhattacharya**

**20th July, 2017**

RP - Sanjiv Goenka Group
Growing Legacies

CESC LIMITED

# DTRs in CESC Network

**Current Population: 8273 Nos. (2857 MVA)**

**Demand served by the DTRs: 1700 MVA**

**315 KVA DTR: 4634 Nos. (56%), - '03**

**400 KVA DTR: 3201 Nos. (39%), '03 - '14**

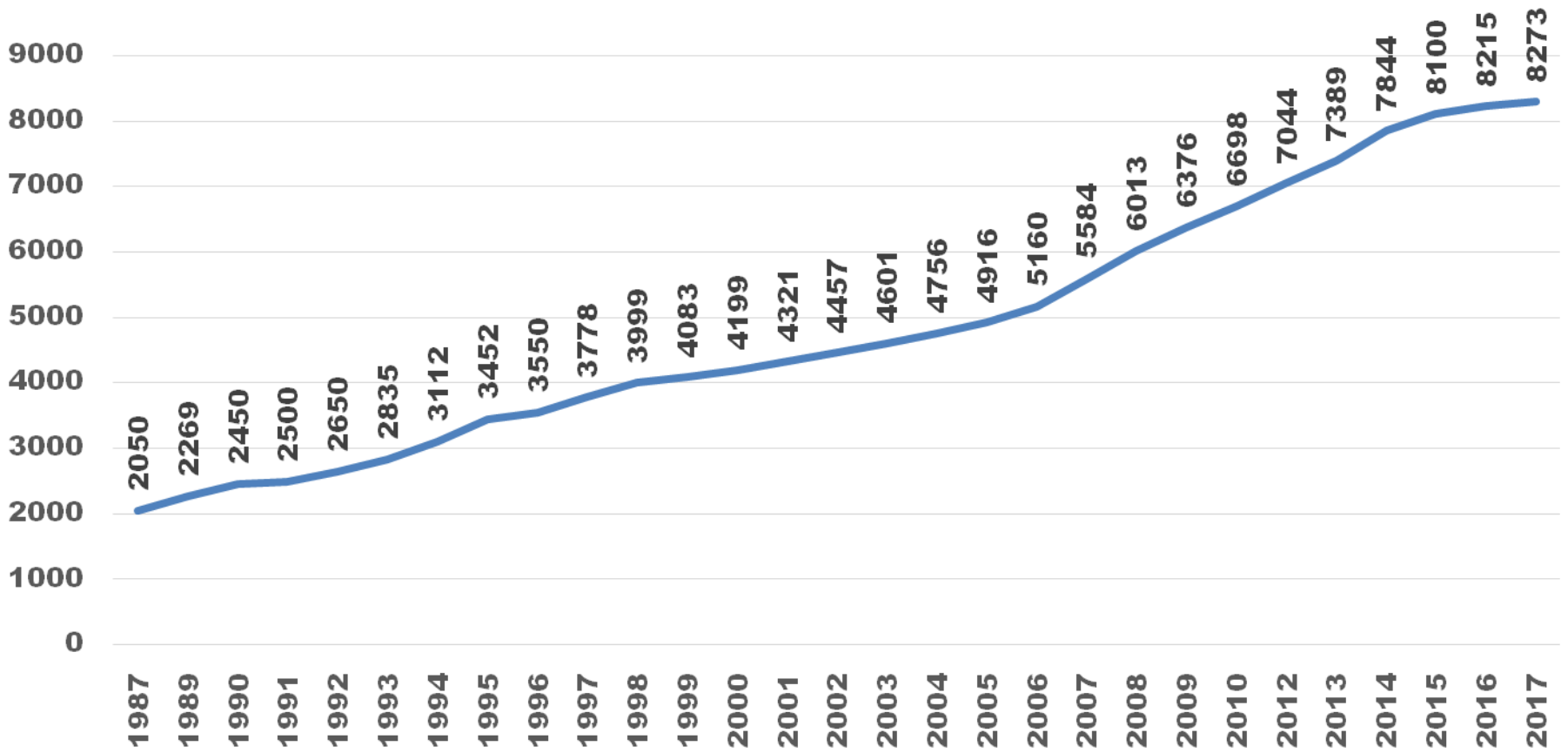
**500 KVA DTR: 63 Nos. (0.75%), since '2014**

**Dry Type DTR: 1854 Nos. (22%)**

RP - Sanjiv Goenka Group
Growing Legacies

CESC LIMITED

# Growth of Population



RP - Sanjiv Goenka Group
Growing Legacies

CESC LIMITED

# Failure of DTR in last 3 FYs

**DTR Failed in '16-17: 34 Nos. (0.41%)**

**DTR Failed in '15-16: 44 Nos. (0.54%)**

**DTR Failed in '14-15: 40 Nos. (0.49%)**

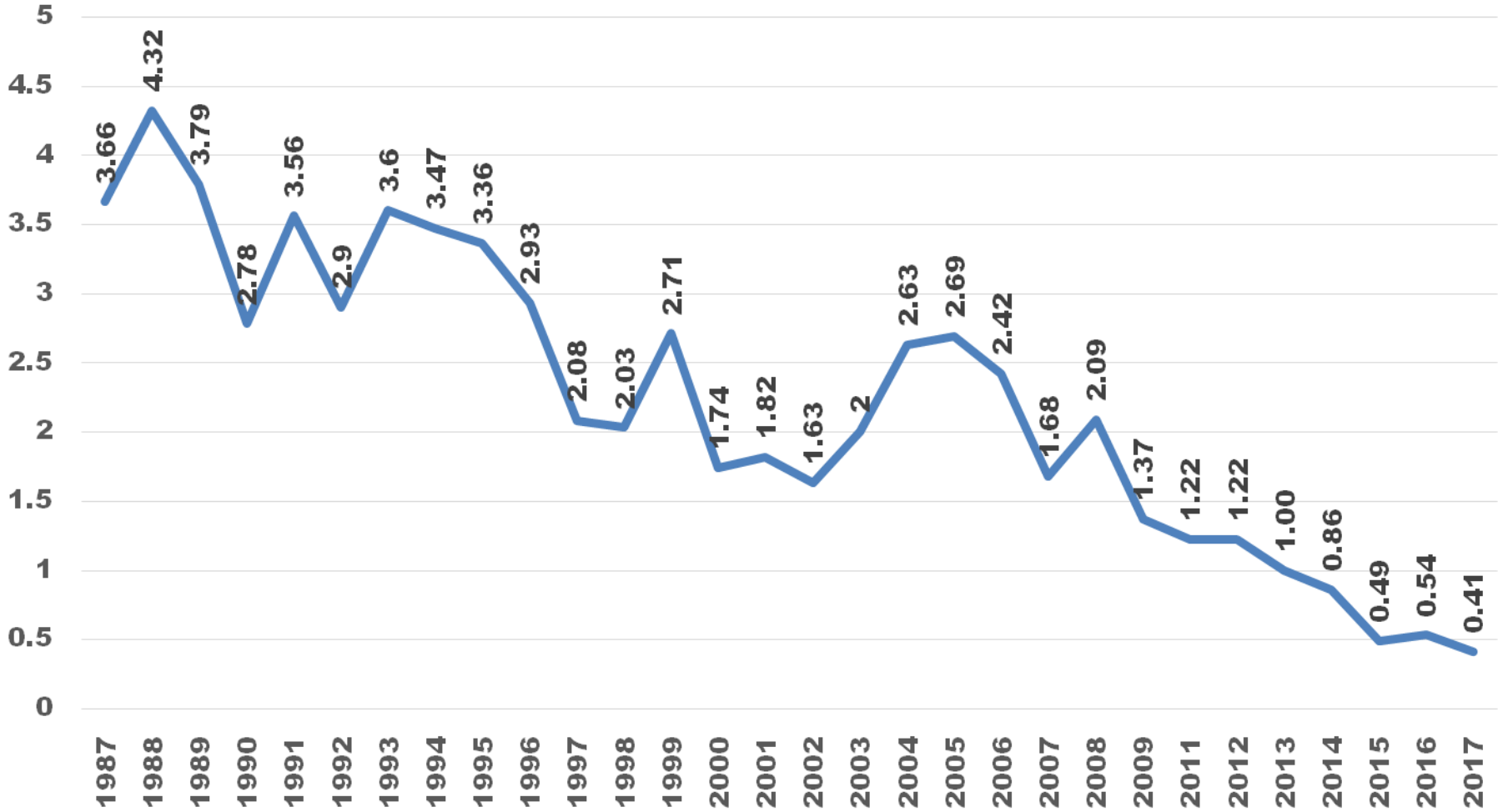
**Over a population base of 8000+**

**Definition of failure: DTR with fault in winding and needs winding replacement.**

RP - Sanjiv Goenka Group
Growing Legacies

CESC LIMITED

# Failure of DTR Over Years



RP - Sanjiv Goenka Group
Growing Legacies

CESC LIMITED

# Practices Followed

**Procuring DTR only from the Suppliers of proven quality and under 5-Yrs warranty.**

**Standardised and Functional Requirement based Specification. Drawings are provided to the OEMs; instead of taking the same from them for approval.**

**Procuring/Installation of only Cu-wound DTR.**

**All DTRs are protected through HRC fuse on both LT and HT side.**

# Practices Followed (Contd.)

**DTRs with cable box termination are only used in all outdoor installation; thus avoiding possibility of external short circuit.**

**Procuring only Dry type DTR; thus no failure due to oil pilferage. Oil type DTRs, in network, are provided with welded m.s. guard over their drain valves.**

**Inspection and Testing of all new DTR through an exhaustive checklist.**

RP - Sanjiv Goenka Group
Growing Legacies

CESC LIMITED

# Practices Followed (Contd.)

**Each new DTR is tested by calibrated equipment of our own, on reaching the same at stock points.**

**DTR of each batch of supply is subjected to Loss Measurement and tested for Temperature Rise Test.**

**DTRs, on random selection, are tested for S.C. Test at CPRI/ERDA on regular basis.**

RP - Sanjiv Goenka Group
Growing Legacies

CESC LIMITED

# Practices Followed (Contd.)

**DTR repairing process in CESC is also quality-centric – no partial winding repair, critically reviewed scope of repair-work, similar stringent acceptance criteria as that of new DTR and 3-years warranty period.**

**Each failed DTR is brought back to our workshop for thorough investigation/assessing probable cause of failure (RCA) – has strengthened FRS**

**Each DTR is now fitted with a small metering kiosk and metered - facilitating load monitoring and control.**

RP - Sanjiv Goenka Group
Growing Legacies

CESC LIMITED

# Practices Followed (Contd.)

**Visual inspection and on-line monitoring of each DTR is carried out as per set regime. Thermo-graphic scanning and PD monitoring is done during on-line monitoring.**

**Corrective maintenance work (CBM) is done based on the outcome.**

**In-house developed MIS, named DTLMS to archiving and operate all stages of Life Cycle of DTR starting from Procurement to Disposal.**

RP - Sanjiv Goenka Group
Growing Legacies

CESC LIMITED

# Conclusion

**So ……..**

**We need to take multifarious measures, for enhancing operational reliability and service life of the DTR, starting from continual change in specification and product improvisation, procurement / repair from the proven vendors, rigorous acceptance test and condition-based maintenance and all through a strong database management system.**

RP - Sanjiv Goenka Group
Growing Legacies

CESC LIMITED

# Thank You