Distribution transformer (DT) Information service at a utility in India

The problem

A utility was struggling to optimise the utilisation of numerous distribution transformers in their distribution system. There was no data on the quality and reliability of supply nor were they able to decide the proper maintenance schedules and the augmentation programme for the transformers.

> ***It was found that 1% DT were loaded beyond their rating, another 1% were loaded more than 80% of their rated capacity whereas 22% DT were under-loaded.***

A comprehensive study was proposed to undertake work to meet these objectives.

Project

A comprehensive distribution transformer study was to be undertaken. This involved capturing the DT meter data, analysing it and submitting meaningful reports to the utility, enabling it to take corrective action.

The month-on-month trend for about 3,000 transformers was to be presented to facilitate monitoring the improvement.

The process

To deliver this service, we are had to develop special software tools. After ensuring correct metering in all the distribution transformers, the project started with collecting meter data and processing it. Various Information reports were generated with a month-on-month trend of the progress. The special features of the service were:

- Monthly collection of meter data through remote meter reading (RMR) or by using common meter reading instrument (CMRI)
- Generation and submission of Information reports to the utility
- Reporting abnormalities like metering error, phase association error to take corrective action which become pre-requisite of correct Information

One of the challenges of the project was to ensure the correct metering system for distribution transformers so that the meter data represented actual system conditions.

The findings

It was found that 1% DT were loaded beyond their rating, another 1% were loaded more than 80% of their rated capacity whereas 22% DT were under-loaded. Moreover, there was load imbalance between phases in 11% of the DTs. All these were gradually optimised by monitoring the month-on-month trend reports, with the co-operation of the utility.

Benefits achieved

The reports allowed the utility to improve the reliability and quality of supply to their consumers. They could plan the maintenance of the DT system and have a programme of planned obsolescence.