Manufactured by:

RITZ Instrument Transformers

WTW

Extended Range Current Transformer (ERCT)

How much income is your company losing over? "INCORRECTLY SIZED CURRENT TRANSFORMERS?"

Problem

For primary metered customers, it is commonly for the load during off peak hours and weekends to be 5% or less of what is rated current of the CT is. If the load is 5% of the rated current CT, what's the accuracy of the CT at that point? UNDEFINED… You don't know. That fact is that as the current gets lower, most CT's ration drifts more and more negative. That's more and more in your customer's favor, or in other terms, less and less income for your utility. At currents lower that 5% of rated current, the accuracy of most CT's can be 1% to 3% or even worse.

Solution

Clearly, if you want better performing CT's you need to buy units designed to outperform the ANSI/IEEE metering class of 0,3. To answer this metering challenge, WTW has developed and Extended Range Current Transformer for applications at 3kV up to 69kV. The designated CT has an accuracy rating of 0, 15% for standard burden up through B 1,8. The accuracy rating is 150% of rated current.

Calculation Example

Here's an example of how income can be increased by applying the ERCT to a typical metering point.

Load Profile

2242 kW (100) for 16 hours on weekends.
224 kW (10A) for 8 hours on weekdays and on weekends.

Rating of Service Transformer:

5 MW (200 A max.)

Existing CT Rating:

200/5 A, 0, 3 B1, 8, RF 1, 5

System:

4 wire, 3-phase, 14400 V

Price of Energy

Euro 0, 08/ kWH

Advantage

According to ANSI/IEEE, tha class 0,3 defines the accuracy from rated current (200 A in this case) to the rating factor (1, 5 300 A in this case) to be 0.3% at 100% of the rated current and then 0,6% accuracy at 10% of the rated current (20 A in this case). Since the load of 10 A is below any defined level for the ANSI metering class, it can be assumed that the CT error is 1% to the customer's favor which is extremely conservative.

Since most CT errors at the rated currents and below are negative ratio errors (the customer's favor), for the times when the customer load is 100 A, the ERCT would offer an accuracy improvement of 0, 45% (0,6%-0, 15%) and an improvement of 0, 85% (1%-0, 15%) when the load is at 10 A. Working out the math, the ERCT could allow a utility to accurately bill for an additional 50,682 kWH per year, which corresponds to approximately Euro 4,054 per year added revenue.

Stock-Advantage

Another advantage of the ERCT is that it allows a utility to standardize on one-possible two-metering CT designs per voltage class. Most medium-to-large sized utilities stock many different ratio CT's for each voltage class they have to service. By standardizing on one or two designs per voltage class, the utility can slash the total money held in inventory, while at the same time, improving the overall accuracies of all metering installations.

It's that simple!

Whether you're out to cut inventory expenses or improve the quality of your primary metered loads or both, WTW-Extended-Range CT are for you.

Comparison of Limits of Current Error for different Standards

Ir%	Accuracy ANSI 0, 3	Accuracy IEC 0, 2s	Accuracy IEC 0, 1	WTW ERCT (36…69kV)	WTW ERCT (15…24kV)
150%	x	x	x	0, 15%	0, 30%
120%	x	±0, 2%	±0, 1%	0, 15%	0, 30%
100%	±0, 3%	±0, 2%	±0, 1%	0, 15%	0, 30%
20%	x	±0, 2%	±0, 2%	0, 15%	0, 30%
10%	±0, 6%	x	x	0, 15%	0, 30%
5%	x	±0, 35%	±0, 4%	0, 15%	0, 30%
1%	x	±0, 75%	x	0, 15%	0, 30%

x= undefined

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