ID 639

Current Phasor Measuring Device for Three Phase Distribution Lines

RA Amarasinghe[1#], MTTT Thanthirimalage[1], WASSW Arachchi[1], MGTR Amarasinghe[1], JR Lucas[1] and N De Silva[2]

[1]*Department of Electrical, Electronic and Telecommunication Engineering, Faculty of Engineering, General Sir John Kotelawala Defence University, Ratmalana, Sri Lanka*
[2]*Lanka Electricity Company (Pvt) Ltd, Colombo 6, Sri Lanka*

[#]35-eng-119@kdu.ac.lk

Protection and reliability are the most paramount considerations in the power system. Current measurement of distribution lines is essential for the power and quality evaluation purposes. The current measuring devices are used for controlling, monitoring and protection purposes. While the measurement of current at an end connected to a substation can be carried out without too much trouble, intermediate current measurements cannot be carried out with ease. Further, instantaneous phase angle differences need to be measured to be able to evaluate power flow in distribution lines. Thus, at present, power loss calculations are approximately carried out by the utility. So, the power quality analysis, switching operations and load transferring in distribution lines are not much accurate. The use of a flux concentrator and hall-effect sensor, with a filter, has demonstrated that a sinusoidal current waveform, with the correct phase angle, can be obtained. The use of the device on an existing line does not need disconnection, nor a separate earth connection to obtain the magnitude and phase angle of the current accurately. The data from the transducer is transmitted to the operator using radio signals rather than Wi-Fi.

Keywords: *current phasor, hall effect transducer, magnetic flux, current transformer*