

Research on Low Voltage Power Line Broadband Communication in the AMI system

Zhang Hailong
Engineer, Department of Metrology, CEPRI
Beijing, China

Keywords: *AMI, broadband power line communication, interconnection, co-existence*

Abstract

About 99% percent smart meters of China have been accessed to the AMI system. The AMI system of China has entered a novel period, in which several advanced and deepening applications spring out. The total speed demand of advanced applications such as precise line loss analysis, active report for electricity cut-off and multi-energy data collection for local communication channel has surpassed 100kbps. However, the bit rate of narrow-band communication technology and micro-power wireless communication, which make up a relatively bigger share in the system, is only 1~10 kbps. Obviously, they are unable to fulfill the advanced applications. Therefore, it is urgent to study low voltage power line broadband communication which bit rate of PHY layer is higher than 500kbps. In order to realize the popularization and application of broadband power line communication, we need to do deep research on interconnection and co-existence technology.

First, as for the interconnection technology, it is necessary develop a standard which covers PHY layer, Data Link layer and Application layer to improve the effectiveness and robustness of AMI System. In the presentation, the time and frequency diversity technology in PHY layer, network optimization technology in Data Link layer and remote upgrade technology in Application layer will be introduced.

Second, as for the co-existence technology, it is necessary to test the electromagnetic emission characteristics of broadband carrier communication in field simulation environment and actual station environment. The presentation also illustrates the large-scale simulation of aggregate effect based on test data. As a result, collaborative coexistence evaluation system for Broadband Carrier Communication will be established to construct an adaptive network on demand based on application scenario.