

## ABSTRACT

The increasing demand of Communication Network these days, has changed the main function of Electrical Power Supply System network. It's no longer used only to distribute electrical power to subscriber, but also as a media for voice communication and various data services, specially Internet Access. Powerline network has different topology, structure, and physical characteristics, compared to other conventional communication media, such as coaxial cable, twisted pair cable, or optical fiber. For that reason, Powerline network needs different communication system, that meet its requirements, to achieve good performance.

This final paper studied about channel code use, on increasing the performance of Powerline Communication (PLC). The received information signal on PLC System have many constraints, some of the issues are high noise level and high distortion attenuation, caused by PLC characteristics itself, which decrease its performance.

On this final paper, system using QPSK modulation and convolutional codes, are compared with system using QPSK modulation without convolutional codes. Both of the systems are compared at AWGN channel, PLC channel without noise interference, and PLC channel with noise interference. The simulation result shows that system with convolutional coding have better received Power Level than the one not using it. On AWGN channel, 2.5 dB coding gain produced at  $10^{-4}$  BER. On PLC channel, to achieve sufficient performance level, coding technic is not enough. Because of selective fading, which is the characterisric of PLC channel, pilot channel needed beside convolutional codes. And for PLC channel with noise interference, beside pilot channel, interleaver is also need to be implemented, because of burst error caused by noise.