

## ABSTRACT

The project focuses on improving the control practices of Automated Technology Philippines Incorporated (ATPI) particularly the operation of a chilled water air conditioning system where an optimal equation was derived to reduce the system's power consumption.

The research is a quasi experimental study using one month power utilization data of the chiller 4 of ATPI. Linear regression analysis was utilized to establish a linear relation of the uncontrolled variables which include building loads (occupants), ambient linear temperature and set point chilled water temperature so that energy consumption will be minimized while maintaining the design requirements of the room in terms of temperature and relative humidity. STATISTICA and MATLAB computer software were utilized to derive the linear optimal equation for the set point temperature in terms of ambient temperature and building loads using regression technique.

The derived optimal equation was evaluated through a series of actual tests. The results revealed a significant difference in the power utilization between existing system versus the system that employed optimized set point temperature. A power consumption drop of 8.7% had been achieved when the optimized set point was utilized.

Comparing the predicted power cost between existing and the power cost utilizing the optimal equation depicted a reduction of 2.5% on the power consumption for the same set point temperature.