Abstract

This thesis was aimed to study the energy conservation in cleanroom and improve air flow behavior in head stack assembly machine to reduce turbulent. First review literature researches, study flow problem in cleanroom of head stack assembly process, create CAD model, measure air velocity, temperature, and pressure in operating cleanroom. Next analyze air flow in cleanroom, using finite volume method and k – ε turbulent model, in 2 cases: normal operation and reduce air velocity to save energy. Then implement energy conservation operation and compare experimental result with the calculation result. Air flow of head stack assembly machine is analyzed to optimize the length of plastic curtain and reduce turbulence.

Regarding research results, air velocity from air supply grill is over cleanroom standard. The air flow behavior in cleanroom was then simulated using finite volume method in conditions of a measured velocity and a reduced velocity. The results showed that air velocity, temperature and pressure in cleanroom is a little difference and not lower than standard. Some AHU was closed and cooling capacity of AHU has a little change from before.

Then air turbulence in machine of head stack assembly process was studied by length adjustment of plastic curtain. The simulation results showed that the optimized length is 70 centimeters which is installed at the bottom edge of laminar flow hood.