Abstract

The energy savings in the centrifugal pump reduce impeller trimming by using the pump affinity laws and the mathematic models joining with the pump affinity law equation. However because of having 3 set of the pump affinity law equations, the value calculation of 3 sets are compared with the result of energy savings by reducing impeller size from 159 mm. to 153 mm. (3.77 % reduction). From the value calculation result of using energy at the point of total Head equation of 5 equations of systems, it has been found that the mathematic model has smaller deviation than the calculation value from the equation of pump affinity laws. As for Head statistics, it has been found that Model 1 closely predicted the actual test value during Head statistics of 0 - 15 meters by having deviation between -1.446 % to 1.124 % Next Model 3 closely predicted the actual test value during Head statistics of 15 – 20 meters by having deviation of approximately 0.432 %. Finally, Model 2 closely predicted the actual test value during Head statistic, which is more than 25 meters by having deviation of approximately 0.291 %.

It is shown that the mathematical model gives effectively the calculation similar to the actual test result so it can be a good alternative in calculating the Head value, flow rate, energy and efficiency value in order to closely predict the actual performance.

Key words: Impeller trimming, Centrifugal Pump, Energy Savings.