

SUMMARY

This thesis presented a comparative evaluation of simulation software applications with a case of industrial robot cell using two simulation software (RobotStudio/PickMater 3 with ad-on Picking PowerPac and Visual components 4.0). The background of both simulation software was explained. The importance of simulation in the manufacturing industries and other related simulation software applications was explained. Also, the importance of a pick and place application in the manufacturing field was highlighted. The criteria-based matrix technique was explained and adopted for the comparative evaluation of the simulation software.

A pick and place application were designed and simulated using both simulators, the performance of the simulation and the simulator features related to the design were compared. Both simulators provided an easy step in designing the model in terms of searching for components. The models were simulated for 20 minutes and approximately 22 minutes respectively, and both systems completed 551 jobs at this time. The overall performance of the simulation depends on the input parameters such conveyor speed and robot positioning.

The comparative evaluation of the simulators was done under four important features with necessary rating criteria listed under the features respectively. The comparative evaluation result in figure 8 showed that both simulators meet most of the criteria at the highest level. The visual components showed more quality in the modelling criteria group. When it comes to simulation criteria, RobotStudio provided more quality in terms of operators' panel.

In conclusion, the choice of any simulator by manufacturers or institution depends on the software suitability for its intended purposes. Other factors to consider are the software license cost, individual preferences, ease of usage and previous knowledge of using the software. Feasible solutions based on the comparative analysis was stated.