

Summary

One of the ideas of the 2000-12 project-team to handle large containerships, is to use a buffer in front of the crane with a capacity of one or two hours. The contact between the crane and the buffer is taken care of by Automatic Guided Vehicles (AGV's) .

This report is about a Taylor II simulation concerning the described proces. First is shown how the model is built. The model is written in such a way that the whole proces can be followed 'real time' on the screen. The global working of the model can be summarised as follows: A container enters the system at the motherstack, due an arrival-schedule. Passing a 'black box' the container is transported to an elevator. The (available) elevator with the lowest through-put is served first. The elevator lifts the container to a plateau, in a TRION (a kind of a Automatic Stacking Crane). When the TRION receives a container, it puts it in his stackrow. While the stackrow is not active, the proces repeats itself. At a certain time, an AGV arrives. As soon as the AGV enters the 'loading-path' (connecting dock-stackrow), the stackrow is activated. The stackrow sends a container to the TRION, which puts it (via fictional buffers) on the waiting AGV. After acceptation, the AGV is going to the crane to deliver his cargo and after that it's returning to the stack.

After the model is built, several experiments are done. The most important question asked here is: What's the optimum number of AGV's in the current situation. First a manual-calculation is presented based on average figures. Hereafter a simulation in Taylor II is done. With a warmup period and different numbers of AGV's, a optimal AGV-configuration is found. Obvious is that, because of the deviation in the crane's serving-time, more AGV's than expected are necessary.

After the experiment, conclusions and recommendations for future research are given. In the conclusion the model's validation and verification are shown. Also the author's opinion of working with Taylor II is given. The recommendations are about possible further expansion and details concerning the model built.