

Factory Simulation¹

Ramzi Haraty and Yousef Kaddoura

Lebanese American University

P.O. Box 13-5053

Beirut, Lebanon

Email: rharaty@lau.edu.lb

Sometimes, charts and blueprints are not enough. Before industrial engineers can configure a manufacturing plant or machine to operate at its peak efficiency, it helps to see something slightly more tangible. Simulation and animation software give designers a chance to rethink their layouts long before putting the new machine on the factory floor, saving design dollars and increasing the plant's efficiency once it is operational. Viewing the animated model of the simulated factory along with the statistics' report produced by the simulation software, the decision making process will be much easier and convincing, and the probabilities of failure will be minimized. This helps the manager to be well aware of the risk that s/he is running (e.g., cost of adding a new machine).

Our work involves building a simulation model for a plastics factory and animating its activities. The manufacturing process consists of three main steps. The first step consists of building the plastics' products using different machines with different molds. The second step includes cleaning the products; this is accomplished by having "investigators" identifying the good products and getting rid of the "extra parts". In the third step packaging takes place where a packaging machine takes each plastic product and packages it accordingly. Each of the machines involved in the manufacturing process operates at its own pace. Machines in the first step are given plastic raw material with different colors.

The simulation model emulated the functionality of the different machines present on the floor of the factory that are involved in the manufacturing process. The model was built and operated using real world data and was run according to specifications. After the model was built, the factory operations were "animated" to depict exactly the functionality of the factory.

Our project provides managers and decision makers with tools to enable them to model before building/buying, to simulate before producing and to anticipate and solve production problems before they actually occur. Using the data produced by this software, the decision making process becomes easier since it would rely on actual data.

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