

Summary

Modern warehouses make frequent use of automated warehouse systems. Seen the high personnel costs in the Western world these automated warehouse systems payback fast.

There are mainly two different Storage Retrieval Systems (SRS), namely:

- Automated Storage Retrieval Machine (SRM)
- Carousel System (CS)

These systems automatically store and retrieve goods. The goods to store are deposited at the input side and the goods to retrieve are retrieved and deposited at the output side.

The delivery of goods at the input side and the removal of goods at the output side are mostly done by human controlled forklifts or automated guided vehicles (AGV's).

When designing a warehouse one should make a thought-out choice between SRS's. In addition one should carefully look at the distribution of different products in the warehouse system. Products can be distributed randomly or smart storage strategies can be used.

It is possible to calculate both systems performance, but the calculation models are only valid if some conditions are complied. For example; fully filled system, articles are always in the inventory, the warehouse is or complete randomly filled or completely 'smart' filled etc. In practice those conditions often do not apply.

In this simulation assignment a simulation is build which makes it possible for the user to predict the performance of both systems. The user can choose between a SRM and a CS system, forklifts or AGV's, create the input of articles and demand for articles (stochastic can be included) and the user is completely free in the distribution of articles in the warehouse system.

The simulation is verified by calculations, visualization and model tracing. The behavior of the simulation and the output of the simulation are consistent with the expected behavior en calculated outcomes. The simulation model is thus a good representation of real automated storage retrieval systems.

The simulation can be used in the design of warehouses and different storage strategies can be tested.