AutoStore: Strategies for Increased Performance - a Game of Chess by Daniel Lundkvist and David Flyrin (2023).

In chess, every move matters. Likewise, how a company designs its processes around the AutoStore system affects its performance. AutoStore is an automation solution for warehouses that store goods efficiently in bins, stacked on top of each other in a cubic layout. Robots are traversing on the top layer, digging up and retrieving bins to workers at ports. Visually, the grid of an AutoStore closely resembles a chess board, and how the processes around the AutoStore are designed very much resembles how a game of chess is played.

When playing chess, experienced chess players place their pieces strategically on the board, to maximize their chances of winning. Just as for the AutoStore, the surrounding processes must be designed carefully to achieve high performance.

Companies are using the AutoStore with very different ways of incorporating it with their specific warehouse operations. To fully utilize the efficiency of such a system, the physical action of putting in, or picking items from the bins should be as quick as possible. Also, the conditions in which you let the AutoStore operate affect how quickly the robots will retrieve your specific bin. Items that are frequently picked, or soon to be picked, favor being close to their destination port to minimize robot travel and digging time. Do companies using an AutoStore implement a suiting strategy to successfully conduct business, winning their game of chess?

Depending on a variety of factors, every company faces different challenges, like there is no recipe for winning every game of chess.

However, there are more and less efficient ways of playing, regardless of the game. Conducting multiple time-consuming activities by the port limits the speed of each pick, just as having to wait for a printer to finish before you can finish an order adds time per pick. A high variety of goods, needing separate processes and having to handle each item one at a time instead of batching, further limit the performance. Letting the system rest, can also have an impact on how efficiently the robots retrieve your desired bin. Also, switching between picking and put-away in the port is like setting up for a game where you play as white. Suddenly, you have a change of heart to play as black instead, causing the robots to rearrange the board.

Warehouse automation and AutoStore are increasing tremendously, but is it always that simple as a plug-and-play? To fully utilize the possibilities with the AutoStore, companies need to understand the technology, its abilities and constraints, but also understand themselves and their challenges. If you wish to checkmate your opponent, you need to have a fitting strategy for the game, and not wait too long between moving your pieces.