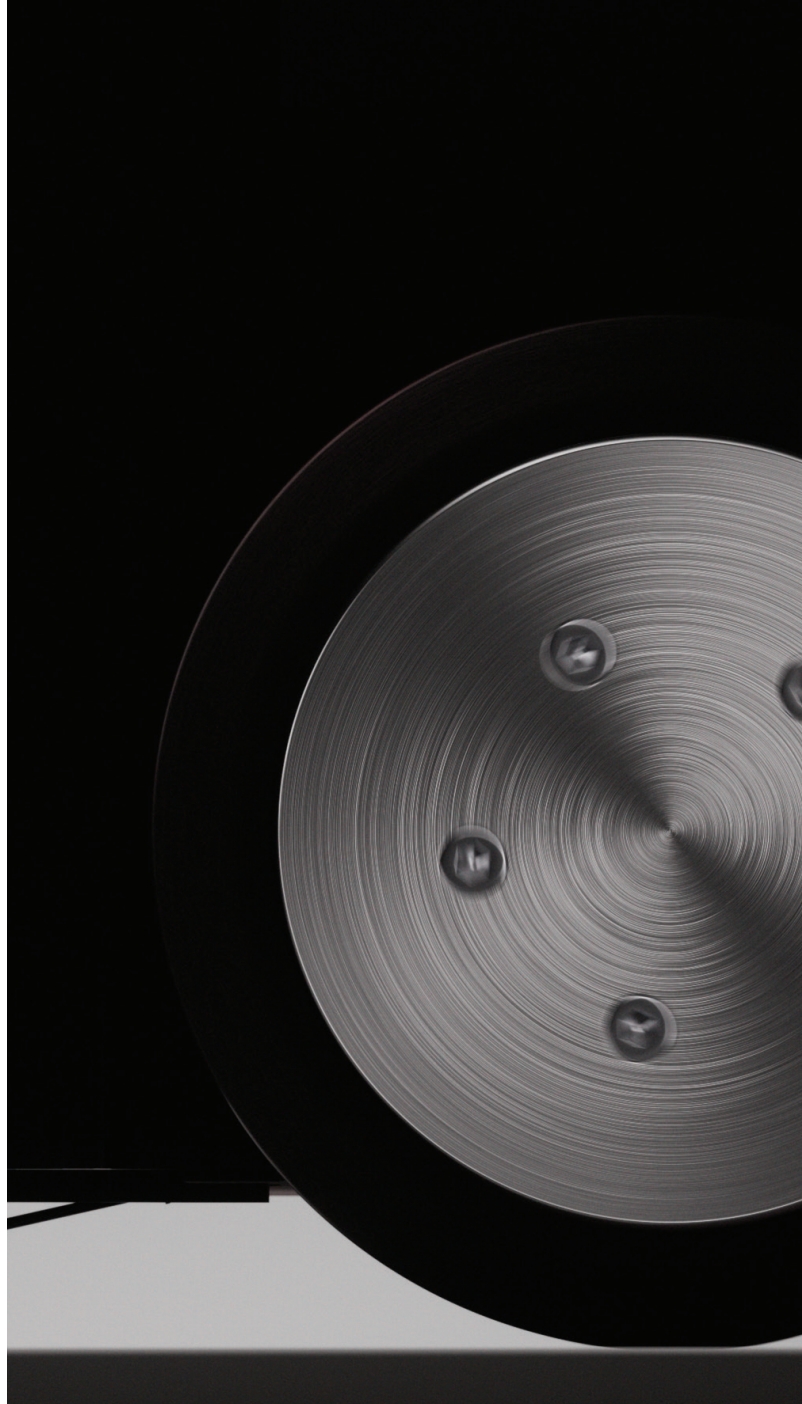AutoStore

3 Myths around Automation Debunked

The growth of e-Commerce market is expanding but how fast and how big it will become is still uncertain. And it's altering the traditional business model.

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For many in the logistics industry, warehouse automation is nothing but a headache. It's as if one needs to become an expert to simply understand all the new terms, calculations, and information from vendors.

Yes, there are a lot of options when it comes to warehouse automation. And yes, there are a lot of new terms. But, we promise, they aren't as complicated as they may seem.

From our over 20 years of experience in the warehouse automation and order fulfillment industry, we've identified three key areas where subtle variations in concepts and phrases can result in major impacts on a solution's performance.

01. Workstation Capacity vs Overall Throughput

High workstation capacity means high throughput, right?

Not quite. They do work together, but high workstation capacity does not necessarily mean a system will have a high sustained throughput.

Think of the workstation capacity as running a sprint and the overall throughput rate as a marathon.

The workstation capacity is the ultimate goal the machine or solution can achieve.

The problem is, workstation capacity is usually theoretical – isolated for a short period of time, away from the challenges of the real world (human workers, order changes, environmental impacts).

Typically, the workstation capacity is determined through a pick test, usually done with a member of the solution vendor's team with honed picking skills running the system. In that environment, there is no need to worry about adapting to the everyday issues that arise such as increased demand, system downtime, order cancellations, labor fatigue, and others.

Meanwhile, throughput provides a picture of the system over an extended period. It considers the real world such as the picking speed of human workers, the machine, the surrounding material handling equipment, and human workers.

Looking at the throughput also brings the workstation capacity into the real world by possibly identifying bottlenecks in the system such as variations in handling time, backup on conveyance, system reliability, or fatigue.

It is also a more realistic view of what your employees can handle.

When researching a solution's workstation capacity and overall system throughput, here are some questions you can ask the vendor to discover how reliable the capacity rate is in maintaining a high throughput:

● What key assumptions or operating conditions is the vendor making to sustain the throughput?

● What does this look like if the inventory or order profile changes? Can you stress test this in a simulation that accounts for real world inputs?

● Can you share data of the workstation capacity over an extended period from an existing customer with similar operations?

● Is it possible a worker may select multiple units at once from one bin presentation?

● Does the solution provide the ability to batch pick?

It is also important to keep in mind human capabilities. While workstation capacities presented by bin presentations per hour or pick rates may be sexy figures, be sure to ask yourself what is humanly possible for your employees.

One way to do this is through a workstation capacity calculation. This takes the number of seconds in an hour (3,600 seconds) and divides it by the average time it takes an employee to complete a single pick (in seconds) plus the time it takes a given workstation to present the next bin (in seconds).

The calculations would look like this:

Lines/h per workstation = 3,600 sec / (Employee Pick (sec) + Workstation Exchange (sec))

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For a real-world example, one of our clients added our workstation, the RelayPort, to their system. This port has a bin presentation of 600 bins per hour and has a bin exchange rate of every 3 seconds. This is a great number to share during the sales process, but what did it really mean for the employees when the RelayPort goes in?

Our client reported that the picker assigned to the RelayPort on the first shift it went live was breaking out in a sweat just to keep up with the system at the rate it was presenting and exchanging bins.

Using the RelayPort as an example in the calculation above, it would convert to this:

600 lines per hour = 3,600 / (6 sec + 3 sec)

This means, to sustain this rate, the operator must complete a pick every 6 seconds. No wonder the picker was breaking a sweat!

You can also use the workstation capacity formula to calculate the number of workstations you need to hit your overall throughput:

Total workstations needed = Overall throughput (lines per hour) / Lines per hour per workstation

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So, while workstation capacity is important, overall throughput is still the final target for an implementation.

SKU redundancy may be a strategy the vendor utilizes to help offset reliability and system downtime. Meaning, vendors recommend the placement of SKUs in multiple places to protect your operation's ability to have access to a SKU should a robot go down.

This is because if a robot goes down, that section or aisle covered by that robot is now inaccessible to your team.

Imagine a store where bread is located on a section of shelving on aisle 2, 5, and 12. A customer or your employee can always get to the bread on aisle 5 even if aisle 2 and 12 are completely closed for an issue.

And while you can still access the bread on a different aisle, everything else stocked on aisle 2 and 12 is also unavailable to you.

This process also reduces the space available to store other items; the shelves on aisle 2 and 12 with bread cannot be used for other stock.

You want to find a vendor offering you 100% access to your inventory as close to 100% of the time as possible.

When considering reliability, ask for data around the overall equipment effectiveness (OEE). This, especially when taking into consideration the system's availability, performance, and quality, will give you a better picture of a solution's reliability.

Sites like OEE.com can provide you with the resources and formulas to calculate the data.

02. Redundancy vs System Reliability

Redundancy can help lead to system reliability, but it is important to understand how redundancy is used in a solution. For example, redundancy can impact storage density when there is a need for stock redundancy within a solution.

Start by asking for clarification around assertions or recommendations for the need of SKU redundancy throughout the system.

If the vendor recommends intentionally putting bread in multiple areas of the system, ask why. If the vendor recommends a low number of overall SKUs in the system, ask why.

03. Theoretical Data vs Simulation

Understanding how the solution will work for you is imperative. Period.

This is a huge investment. One meant to offer support now and for the future. Your goal is to equip your business and team with the tools they need to meet growing demand. You want your business to grow.

The last thing you need is to invest heavily in automation, only to find out in 3 months that it constantly breaks down or is not robust enough for your operational needs.

The best and final way to determine a solution is right for you is with a simulation of the system after its design.

Ask the vendor how they are confirming the solution will meet your performance demands. Did you provide operational data to them such as warehouse size, inventory, product lines, historical order data, shift structure? How did the vendor use that data?

A vendor designing a system and guaranteeing its performance using theoretical numbers is not looking at your operations. The vendor is looking at averages across multiple sites.

Or possibly using Excel to calculate the outcome of their solution with your data.

With as much as you will invest in automation, can you afford to receive a guarantee the system will work based on calculations in Excel?

A vendor offering you a simulation of the final design is confident its solution will meet your operational demands. This is because, if the design is based on your numbers (input, output, product lines, warehouse processes), the simulation will show how the system will react in a real-world environment with external factors at play.

Simulating the solution using your data provides a much clearer picture of what to expect. It may mean the results are higher or lower than using theoretical numbers, but you will know how the solution will perform before it is even installed in your building.

during typical operations as well as unexpected peak demand such as Black Friday.

And requesting a simulation of your system should not mean an extra fee. What is the vendor afraid you will see that it works to discourage simulations through an additional fee?

Here are some questions to ask when getting to the final confirmation of your design:

• Will the vendor provide a simulation of the design?

• Is the simulation software similar or the same as the software used by the live system?

• Will the simulation show how the system will perform under regular operations? Peak times such as Black Friday? (This shows if the system can meet and stand up to unexpected demand.)

• What of my data is used to prove the system will meet my throughput needs?

The number of warehouse automation solutions available is promising and means there is a perfect fit for your operations. However, any number of pieces that come with making this decision can appear intimidating. It doesn't have to be.

Understanding some basic concepts provides a foundation to equip you with the tools to make the right decision. These areas, apart or together, can play a huge part in your goals for the solution. It's important to understand the nuances and what it can mean for your ultimate selection.

About AutoStore

With over 900 installations around the world, AutoStore is trusted by some of the biggest brands. For over 20 years AutoStore has continued to innovate and improve its system for its customers. It delivers the density, flexibility, and dependability you need to excel in this race called eCommerce.

AutoStore, founded in 1996, is a robot technology company that invented and continues to pioneer Cube Storage Automation, the densest storage solution in existence.

Our focus is to marry software and hardware with human abilities to create the future of warehousing. The company is global with installations in 40 countries in a wide range of industries. All sales are distributed, designed, installed, and serviced by a network of qualified system integrators called partners.

The corporate headquarters is in Nedre Vats, Norway, with offices in the US, UK, Germany, France, Austria, Spain, Japan, South Korea, Singapore and Poland.

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Award Winning Solution
2018-2020

November 2018

AutoStore named as one of Europe's 100 digital pioneers.
Google & Financial Times

December 2018

AutoStore receives the 2018 Green Supply Chain Award.
Supply & Demand Chain Exccutive

November 2019

AutoStore voted Game Changer of the year.
Deliver Conference 2019

December 2019

AutoStore receives the 2019 Green Supply Chain Award.
Supply & Demand Chain Exccutive

December 2019

AutoStore voted Product of the year, Reader's Choice Award for AutoStore™ Black Line.
Material Handling Product News

December 2019

AutoStore named Business of the Year.
European Business Awards

March 2020

AutoStore features in FT 1000 annual list of fastest-growing companies.
Financial Times

June 2020

AutoStore voted Product of the year, Reader's Choice Award for AutoStore™ Black Line.
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July 2020

AutoStore™ Black Line awarded in the Robotics Award 2020.
Hannover Messe

December 2020

AutoStore receives the 2020 Green Supply Chain Award.
Supply & Demand Chain Exccutive

December 2020

AutoStore voted Product of the year, Reader's Choice Award for AutoStore™ Micro-fulfillment Centers for Grocery.
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December 2020

Recipient of the annual 2020 FL100+ Award Top Software and Technology Providers.
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