



## Taming the Problem Child in Automation

Discussing the advantages of pre-engineered, agile automation solutions and why they have been successful in processes such as injection molding and metal cutting. **(Part 2)**

# “Don't believe your engineers. You cannot have high-speed and flexibility, so pick one.”

In my last article, [The Problem Child in Automation \(Part I\)](#), we discussed the advantages of pre-engineered, agile automation solutions and why they have been successful for processes such as injection molding and metal cutting. We know that the trend towards standardized, flexible, automated production technologies allows manufacturers to **quickly react to market demands, win new businesses, optimize capital investment, and/or survive market threats and disruptions like COVID**. However, when automated assembly equipment needs to operate at a rate of over 30 parts per minute to 1000 parts per minute, the benefits of efficient, standardized, versatile, automated assembly solutions are still elusive. In the current value chain, manufacturers rely on their machine builders for one-of-a-kind, engineer-to-order machines to automate the assembly process for a new product or process. But why?

## Pick One: Speed or Flexibility

*"Don't believe your engineers. You cannot have high-speed and flexibility, so pick one."*

Response from the CEO of a custom automation company when told that we were developing an assembly technology that offered Speed, Precision and Agility.

[Continuous Motion & Indexing Motion Technologies](#) | When **SPEED MATTERS** and **flexibility are sacrificed**.

We know that typical solutions for higher speed assembly applications (i.e. those that exceed 30 cycles-per-minute) are not known for flexibility. With traditional continuous motion systems (speed of 100+ ppm) and indexing motion systems (speed of between 30 to 60 ppm), the following drawbacks apply:

- ▶ The geometric shape of the parts to be assembled must be round.
- ▶ Highly customized mechanical dials for each component must be designed.
- ▶ The machine rate and the number of assembled components determine the machine's size and the number of mechanical dials. The higher the speed and the number of parts, the higher and larger the number of dials and tooling, which results in a large machine taking up valuable factory floor space.
- ▶ The assembly equipment needs to be retrofitted with new custom design mechanical dials if the products or processes change.
- ▶ There is no guarantee that the redesign mechanical dials will fit the existing frame.
- ▶ A new PLC program must be written.

With these limitations, retrofitting a continuous motion or an indexing motion machine to assemble a product with slight variations is prohibitive because of business interruption due to long lead time and heavy financial expenses (over 75% of original investment). However, so long as the manufacturers are expected to produce the same products over the machine's life, these technologies are viable solutions.

Unfortunately, most companies do not have the luxury of manufacturing the same products without innovation or improvements over their assembly assets' lives. Therefore, these technologies may seem like good purchases in the short term for specific projects. However, they are poor investments for industry leaders that want to grow their revenue by rapidly responding to their market's demands for faster deliveries of higher quality and novel products.

**Automated Pallets and Robots** | When **FLEXIBILITY MATTERS** and **speed are sacrificed**.

As we know, automated pallets and robot assembly systems are primarily used for high-mix, low-volume production when flexibility is a must to address product variability and components that are not round. Although they serve the flexibility requirements, these systems have drawbacks that affect the manufacturers' bottom line.

- ▶ The workspace must be significant to maximize the robotics freedom to function, translating into a greater distance covered by the robotic arm, which results in longer production cycle times and a large machine footprint.
- ▶ Robotics are used to address the variable size of products. So, it needs strength and durability for the arm to do a wide range of repetitive, force-bearing operations that uses a heftier, slow-moving arm.
- ▶ The system control methodology can slow down throughput. Each operation is independent and sequential, resulting in wasted time due to non-value-added "prep-work" movements to perform a single "sneeze-and-you-miss-it" value-added activity like the actual assembly.

## **No Time to Waste!**

Today we live in a world where consumer behaviours are ever-changing. Therefore, **manufacturers who want to win must be agile and adaptive to respond quickly to the market's demands**. COVID has further emphasized that the mass production of a widget in one location and ship globally is less viable when the world shuts its borders.

*So, how do you **achieve high-volume** manufacturing with the **versatility of a pre-engineered automation** platform?*



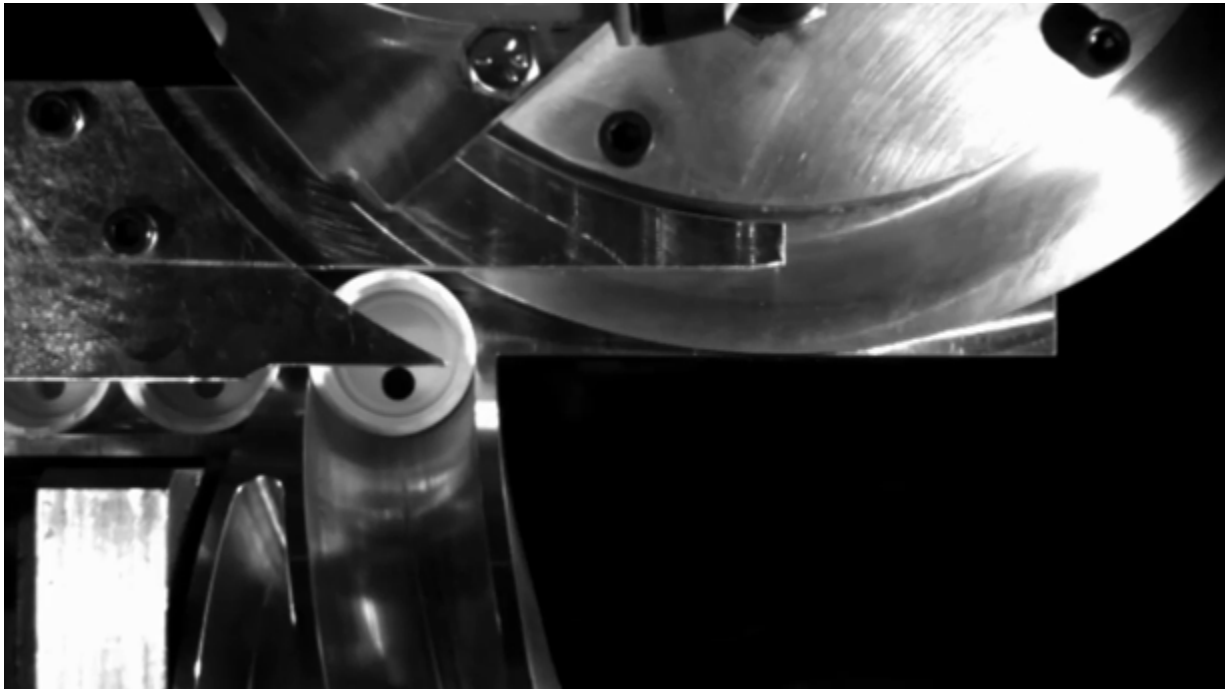
**WITH A SYMPHONY OF MOTION!**

With ATS's [Symphoni](#) platform, we transform the automated assembly equipment supply chain from **engineer-to-order** to **configure-to-order** with pre-tested, pre-validated, standardized, self-contained, plug-and-play modules that are reconfigurable and rapidly deployable.

Each [Symphoni](#) module:

- ▶ Has its own control system that is set up to perform one task very well.
- ▶ Is controlled by the master e-cam to tell them when to synchronize with each other and ATS's Supertrak Conveyance™.
- ▶ Is integrated with ATS's Illuminate™ Manufacturing Intelligence IIoT platform.
- ▶ Can be retooled, reprogrammed, and reconfigured to perform different tasks when the products or processes change on the same shift or five years later.

The core of [Symphoni](#) is its patented rapid speed matching technology ([RSM Technology®](#)) and its centralized control methodology that synchronizes each module's movements to eliminate the non-value-added process between the modules. Like a mechanical cam-driven system, they are electronically geared together by the central control system to perform the value-added process precisely. In essence, the patented technology allows the system to go really fast when it can, but slow and precise where it must.



So, there you would have it, **ATS has tamed the Problem Child in our Industry** by offering [Symphoni](#). This configurable, re-deployable, pre-engineered, compact modular design assembly system provides speed, efficiency, precision, agility, and throughput in a single technology.



## About ATS Automation

For 40 years, [ATS Automation](#) has been working with the world's leading manufacturers to solve manufacturing problems by applying leading automation techniques with a hyper-passion for innovation and excellence. We look forward to demonstrating our thoroughly tested process in providing best-in-class automation solutions.

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