Designing Automation for IML and IMD

September 2024

AGENDA

- IML Design Considerations: Part, Mold, Automation
- The History of StackTeck Automation
- What we've done
- What we're doing
- Where we're heading

IML Design Considerations - Part

Part design and specification considerations:

- For all the various IML decoration processes, the design process starts with reviewing the part geometry and product specifications in detail, such as:
  - What shape is your IML finished goods, round or non-round?
  - What surface consistency do you want your IML finished goods to have, smooth or textured?
  - Do you want your IML finished goods to be clear, glossy, or opaque?
  - Does the IML finish goods require barrier properties?
  - What function and/or requirements will your IML finished goods be serving?
  - Confirming customer specifications is critical when ensuring deliverables meet are exceed expectations at the beginning of a project, such as flex modulus or impact strength, must be established to identify a material set that will meet the specifications.
  - How big is your IML finished goods; depending on the size or shape could determine if multiple IML labels may be required when trying to fit ingredients, barcodes, and vital information about the product?
  - Maximize billboard space vs. printing, determining the size of the label.

IML Design Considerations - Mold

Mold design and specification considerations:

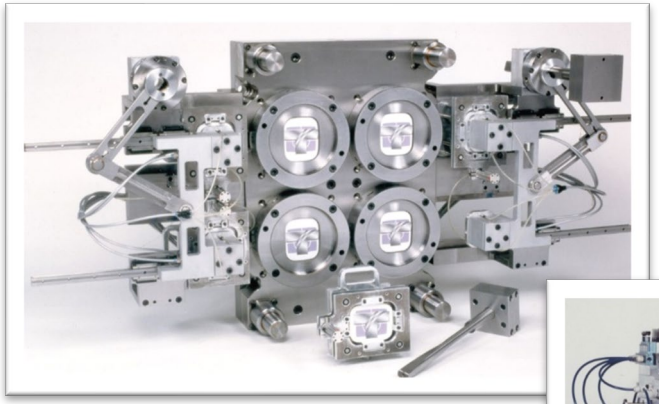
- An IML Mold design needs to be modified from a standard injection mold for the project to be successful. These changes, typically amount to additional 10-15% IML design considerations. Typical molded part design principles still apply:
  - Including consistent wall thickness.
  - Direction of melt flow and potential weld line locations (avoid blow-by defects).
  - Minimum draft.
  - Maximum rib-to-wall ratio to prevent sink marks, and minimum radii to reduce stress concentrations.
  - Gate Location relative to label. Hot Runner location A side vs. B Side and VG vs. Hot Tip.
  - If the IML label happens to fall over opposite the gate location, design considerations, punch out a hole larger than the gate to avoid heat transfer, burn marks, smearing to prevent ink erosion, also known as gate wash.
  - If punching a hole is not possible avoid applying inks or graphics in this location or increase IML label thickness.
  - IML label shrinkage vs. resin shrinkage.
  - IML label sheet direction vs. application.
  - IML label end cuts; open ends vs. butt-ends vs. overlap.
  - Designed-in start/stops features for label placement and repeatable alignment.
  - Finished goods ejection method, a positive mechanical options typically works best when trying to consistently transfer a finished good into an EOAT receiver.

IML Design Considerations – IML Automation

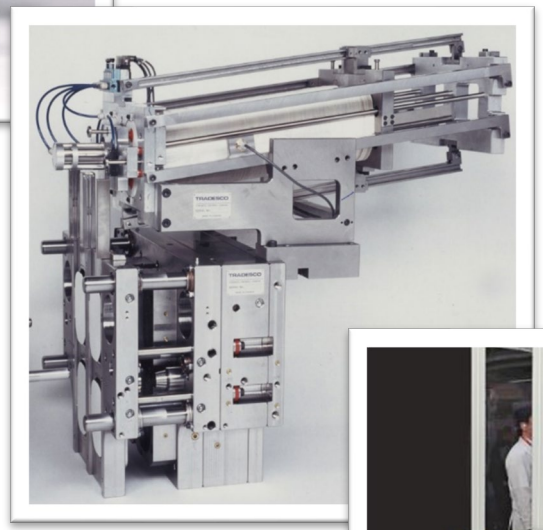
Automation design and specification considerations:

- Among all the possible features on and IML Automation System, Accuracy, repeatability, and Speed (cycle time) are probably the three most important function; this all starts with a robust robot frame capable of dampening/mitigating any vibrations.
  - Production floor space will determine size of Automation and complexity.
  - Is the IML mold a single face or Stack mold?
  - Cavity/Core location, A side vs. B Side?
  - What is the mold cavitation, and Pitch? Ideally the IML label lay-flat will determine the mold pitch.
  - What type of Injection Machine will the IML System run with, what is IMM center position?
  - IML mold Ejection; are suction cups required vs. a receiver?
  - Finished goods placed open-end face down vs face up?
  - Vacuum pumps, Static Generators, and Servo Motors; selecting for the right application?
  - Are the following features required; re-orientate for single file, vision system, up stacking, and case packing?
  - Electrical requirements, certifications, Pneumatics, and connections?
  - Minimize label movement.
  - The ability to provide adjustments on the fly.
  - Environmental conditions, IML label storage and climatizing, moisture in Pneumatic airline.

The History of StackTeck Automation

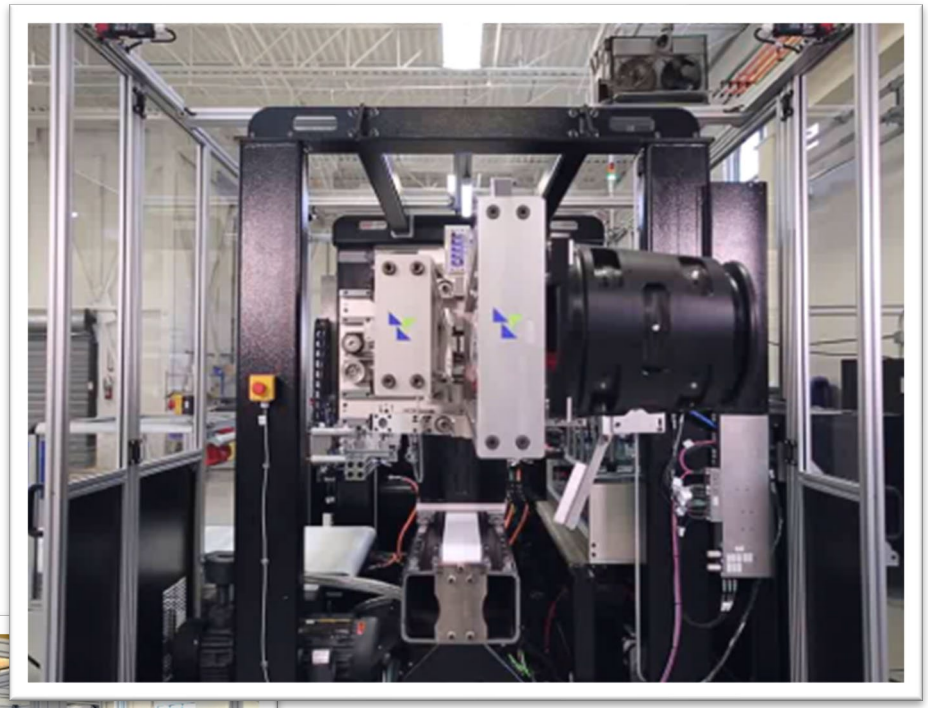


Been doing paper insert molding with mechanical arms from the 90's.



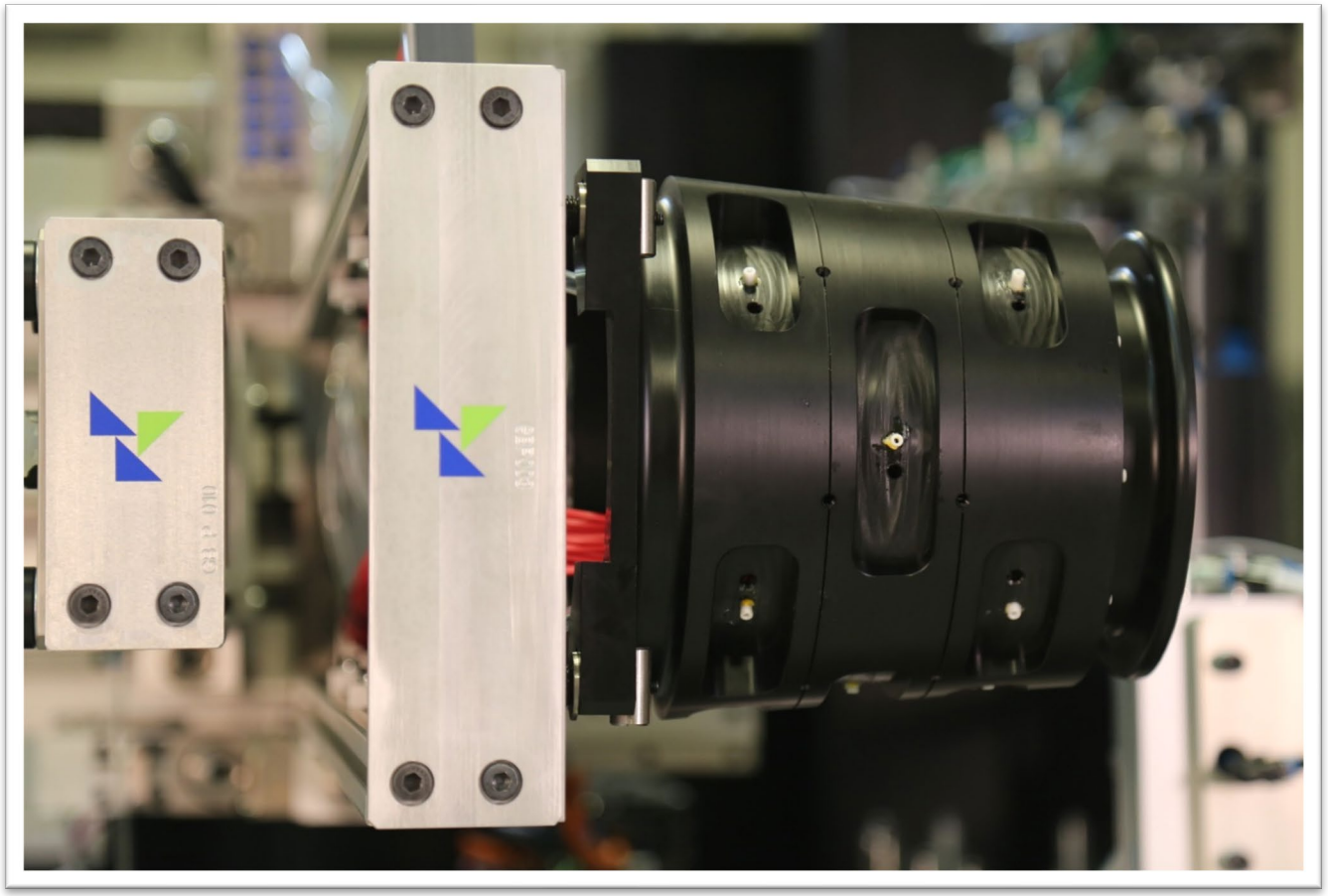
2014 Developed flexible IML robots with YUDO Suns

2019 Start-up of StackTeck Automation in Canada



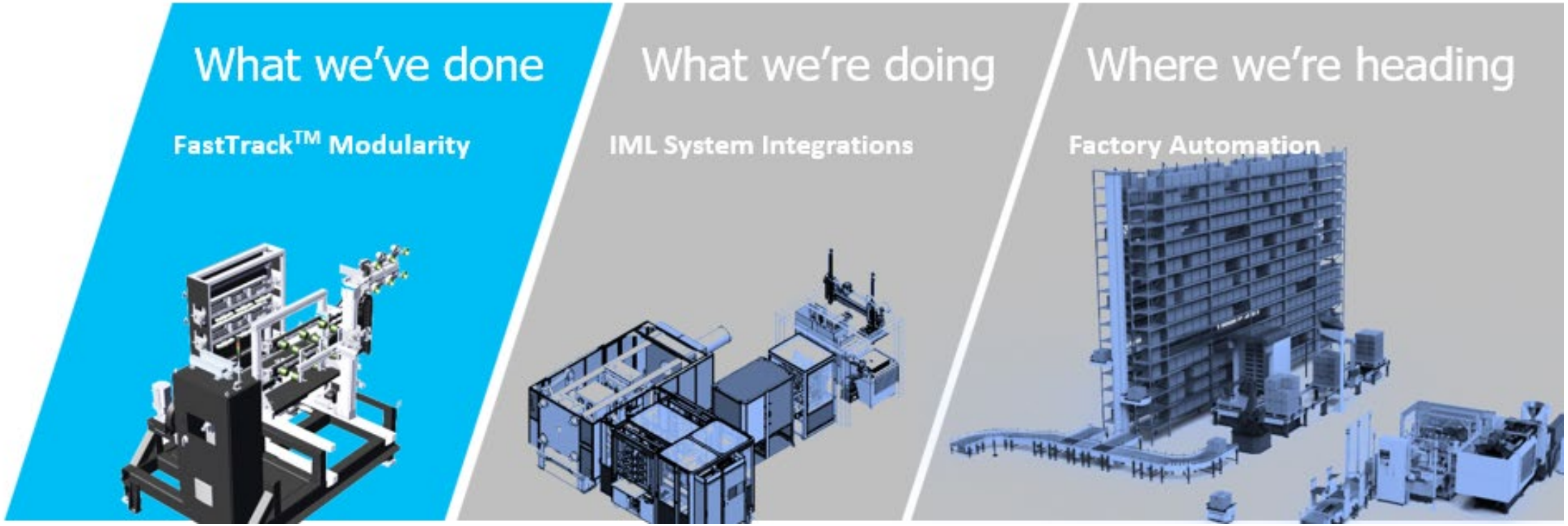
2020 First Canadian Built Product

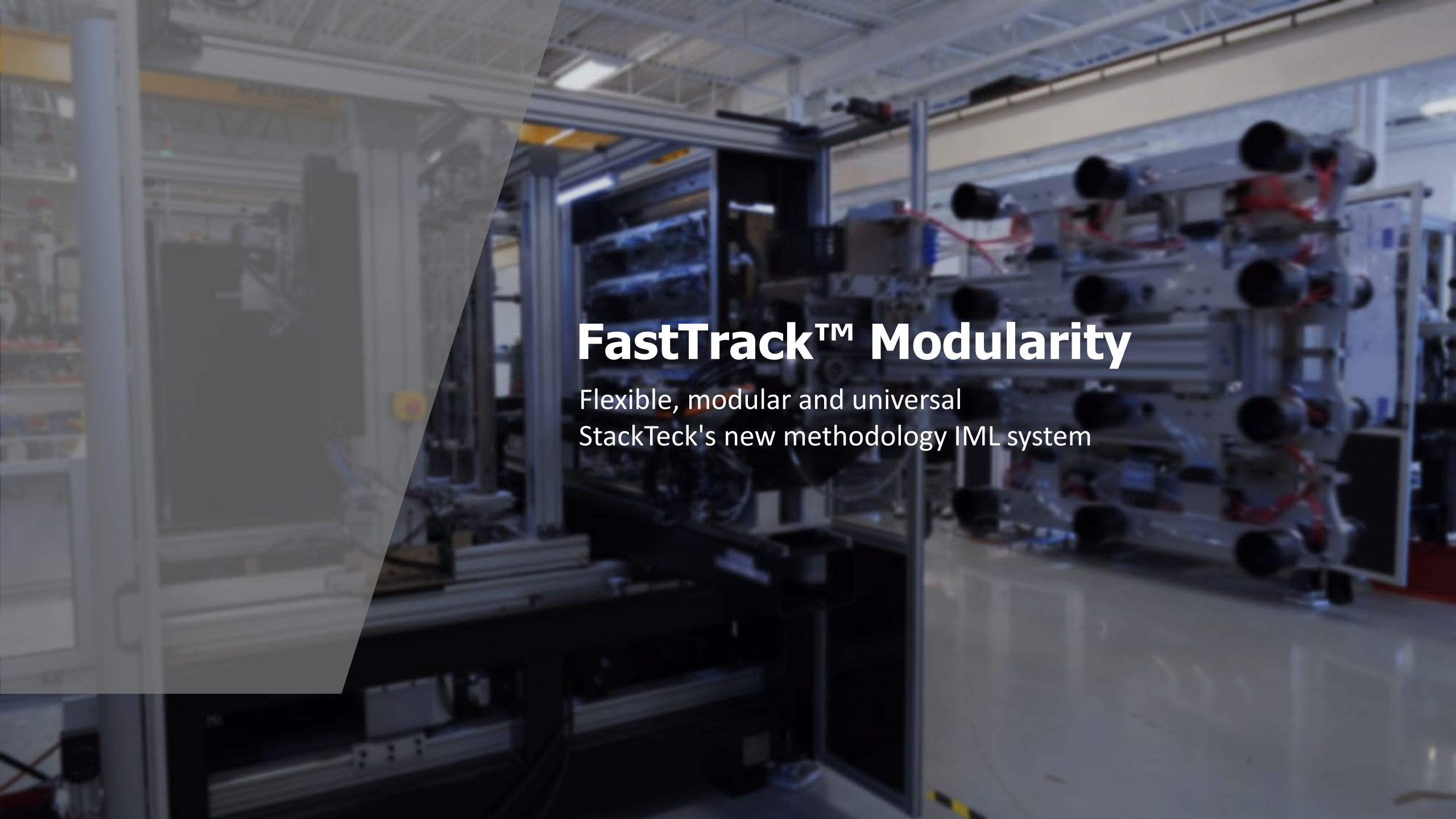
The History of StackTeck Automation



15 Minutes from Mold Facility

The History of StackTeck Automation





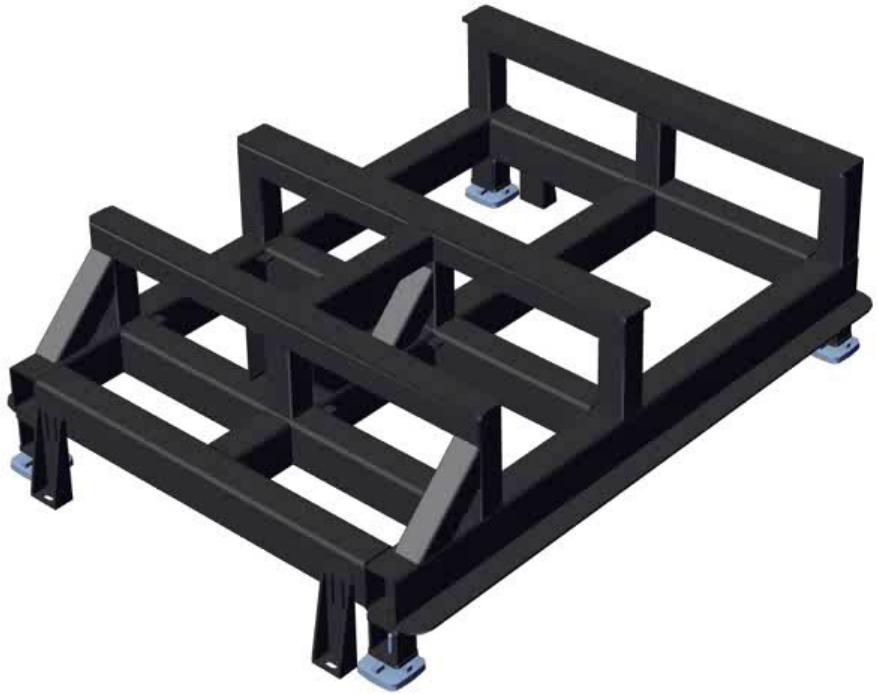
FastTrack™ Modularity

Flexible, modular and universal
StackTeck's new methodology IML system

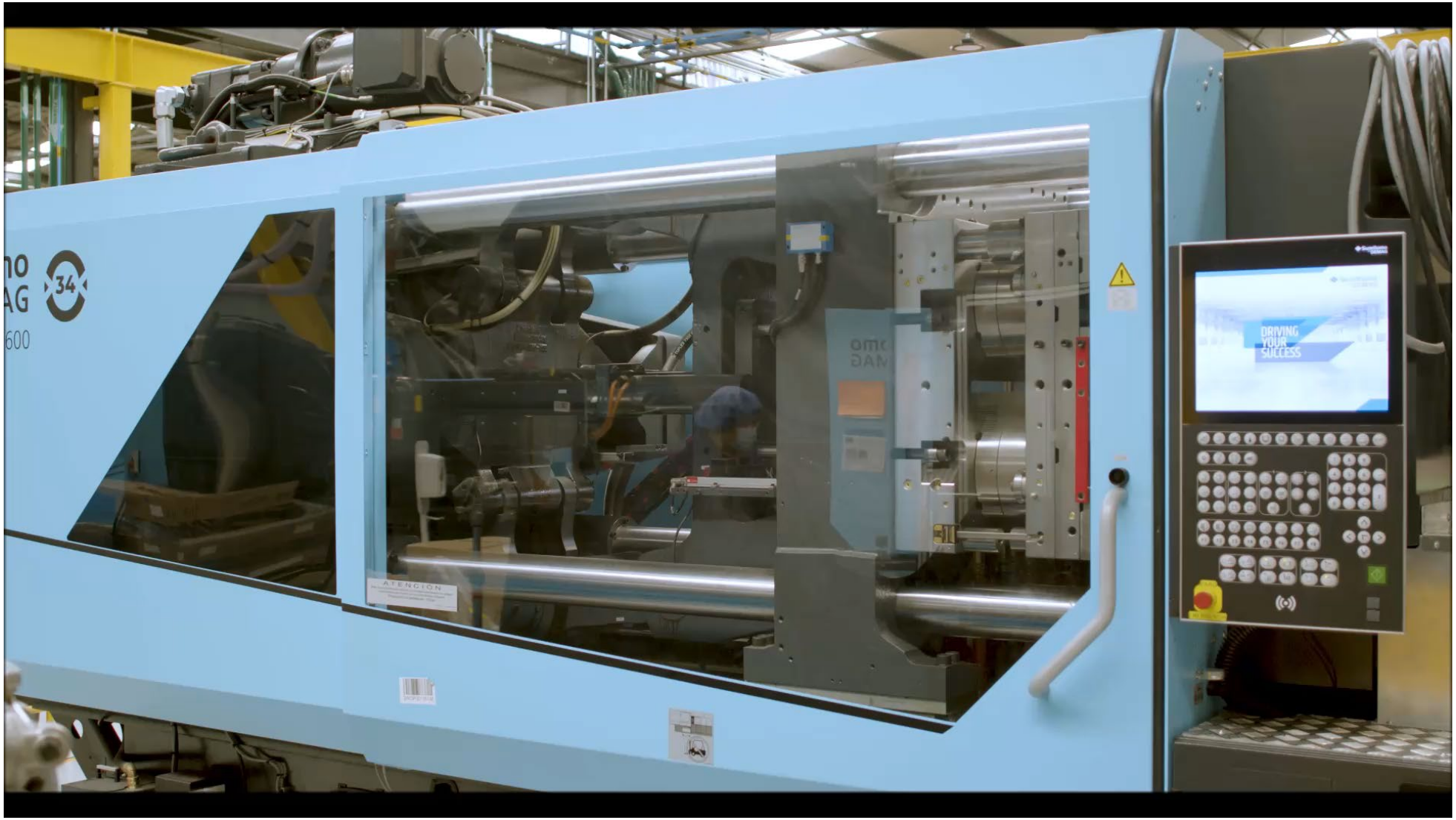
What we've done

Modular Quick Change Tooling Standard Platform

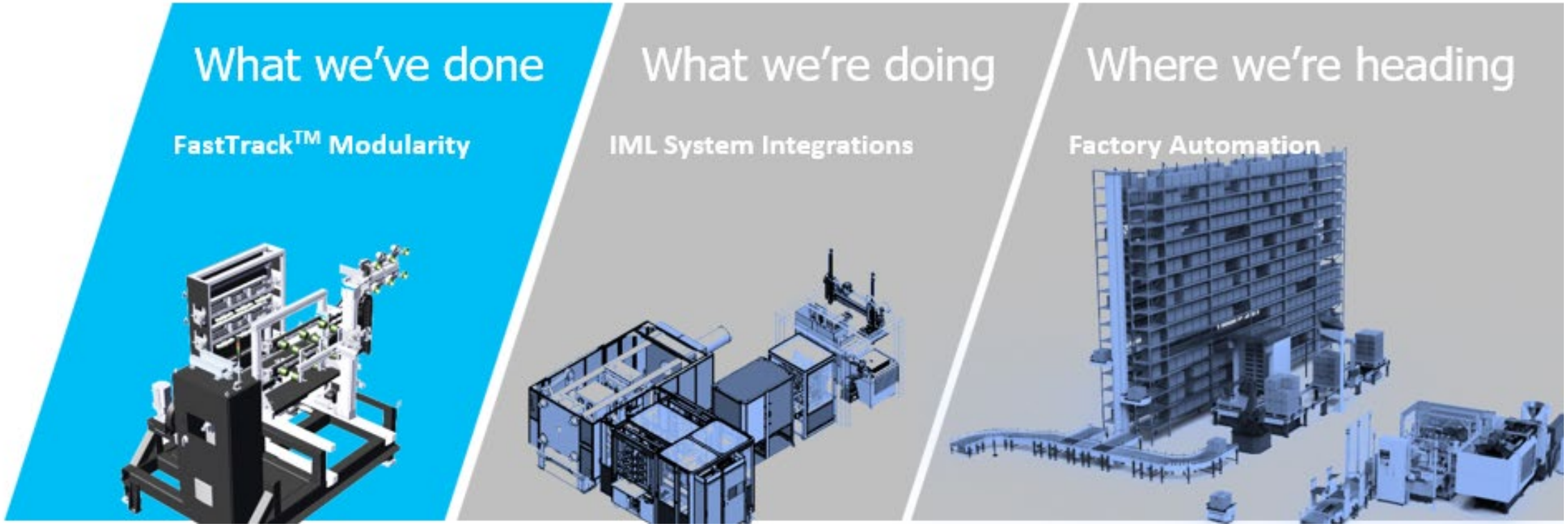
What we've done



The History of StackTeck Automation – Modular Robot at work – 1x6 Container

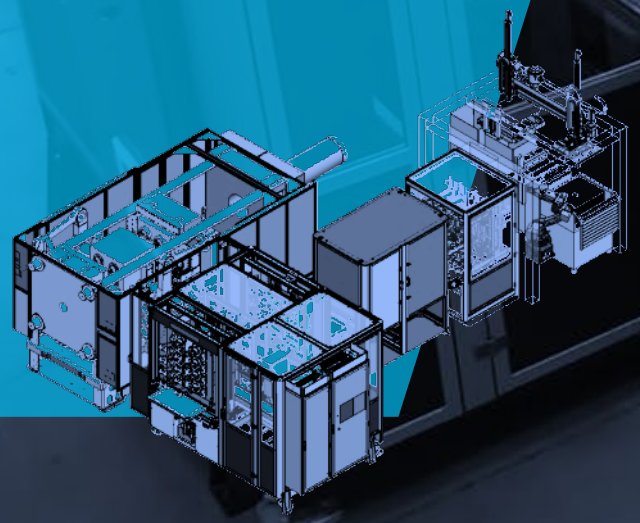


What we're doing

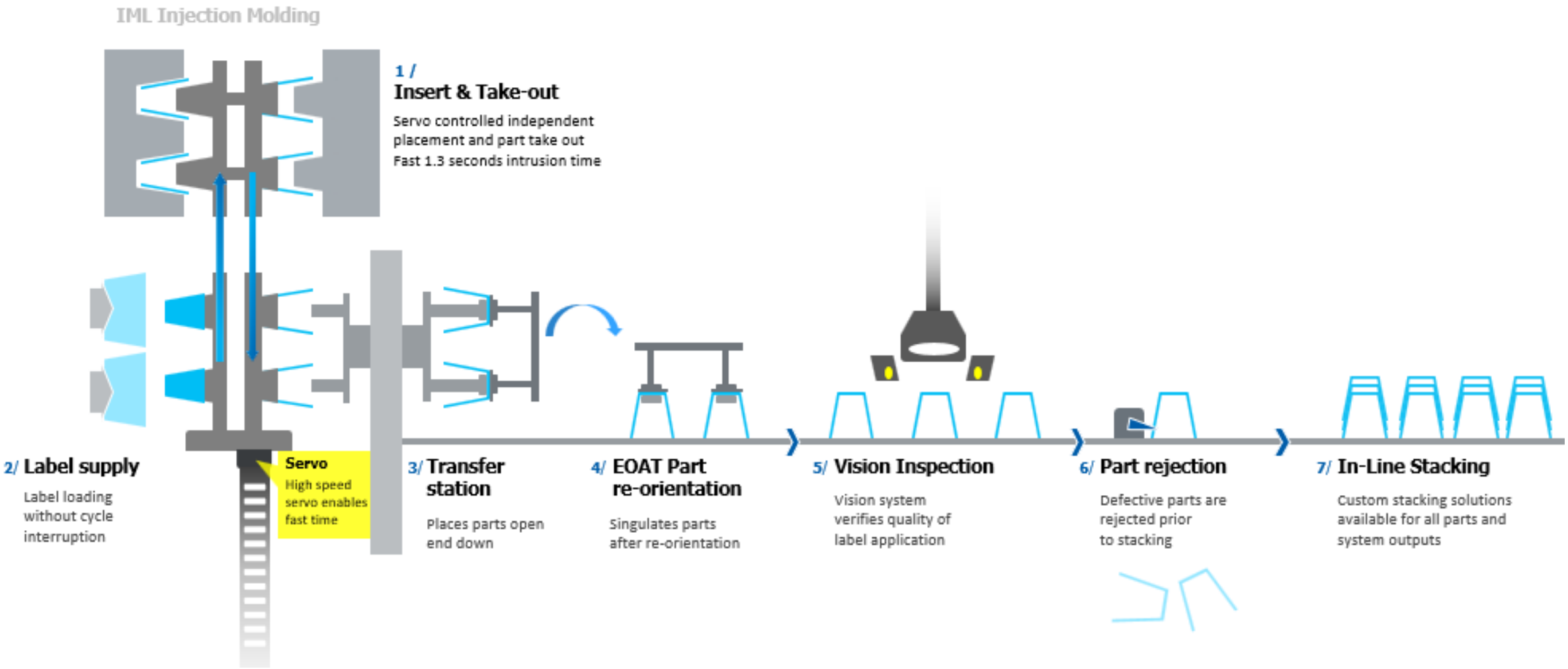


IML system integrations

Expansion with Modules
for Vision Inspection and Stacking

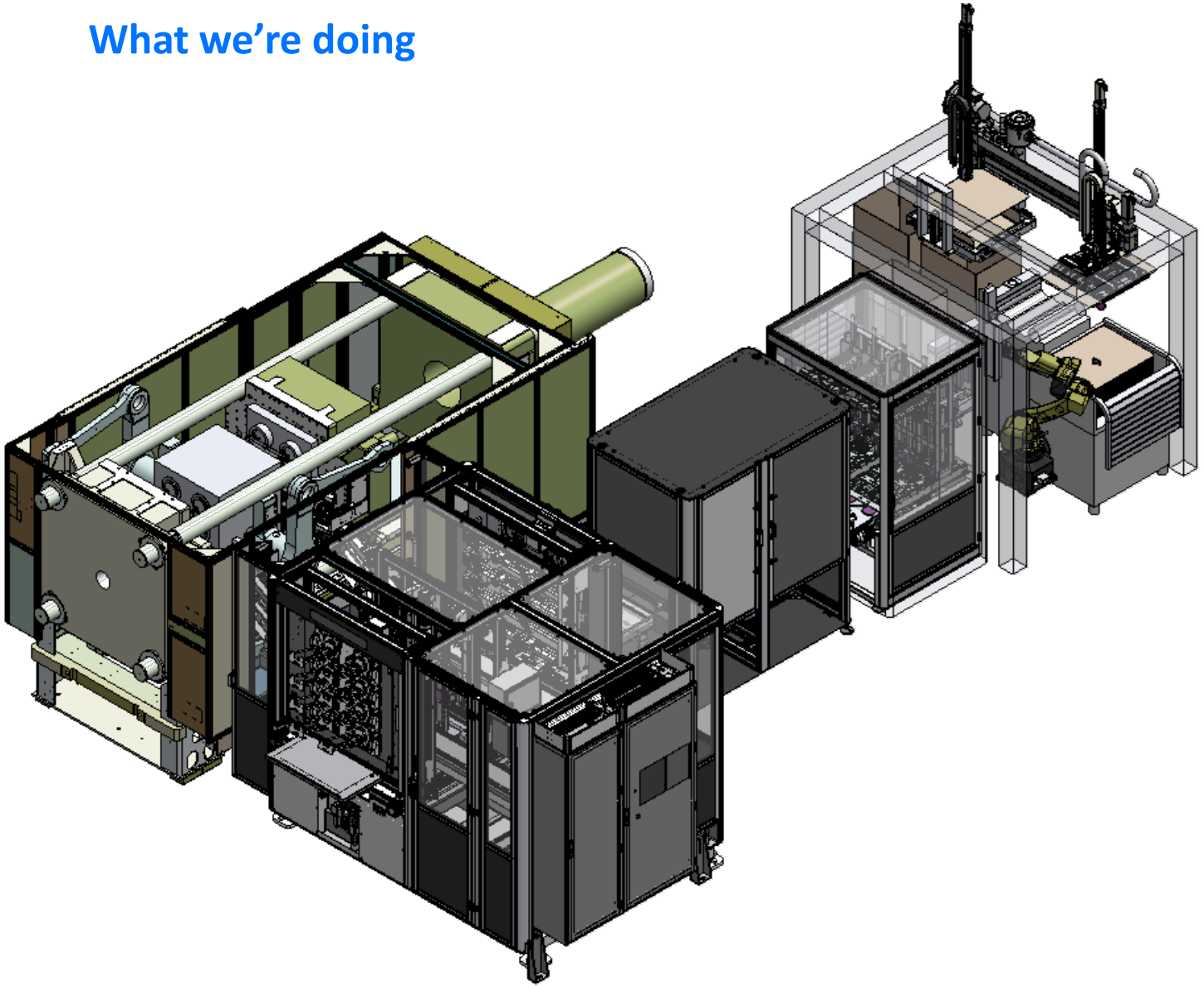


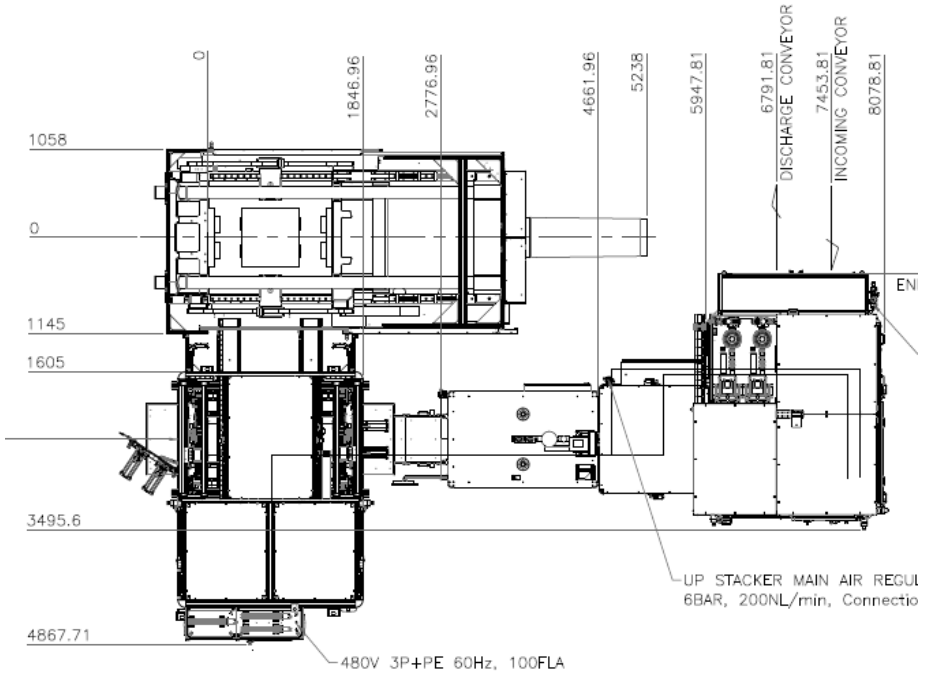
What we're doing



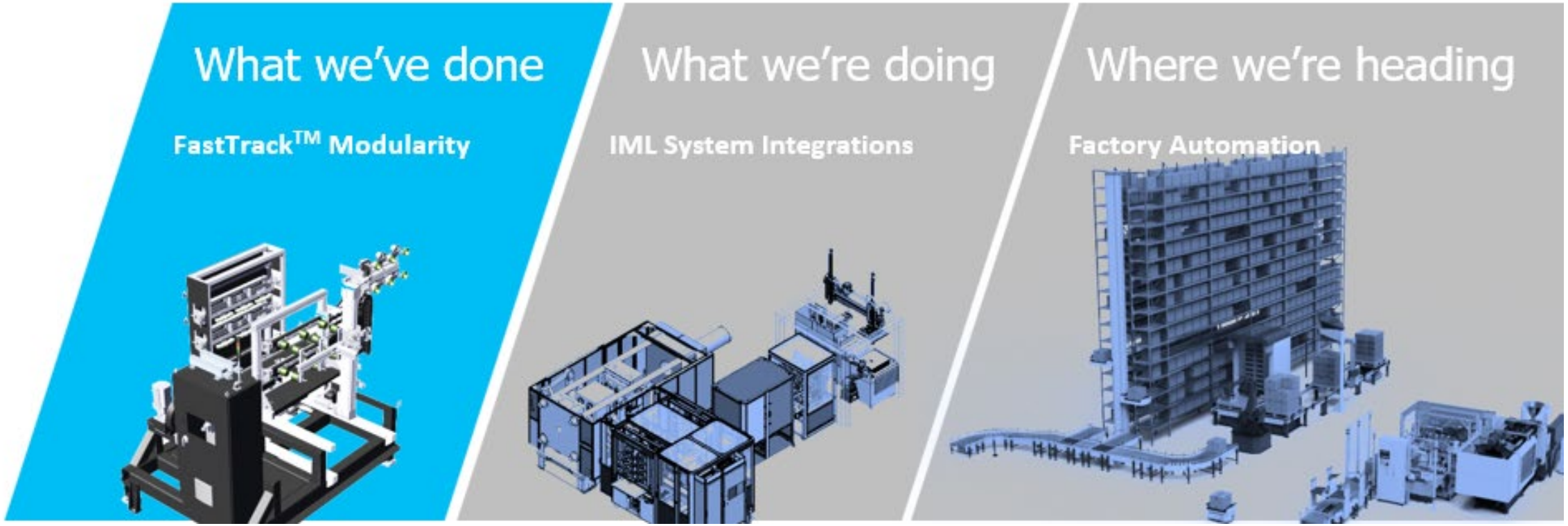
What we’re doing

What we’re doing



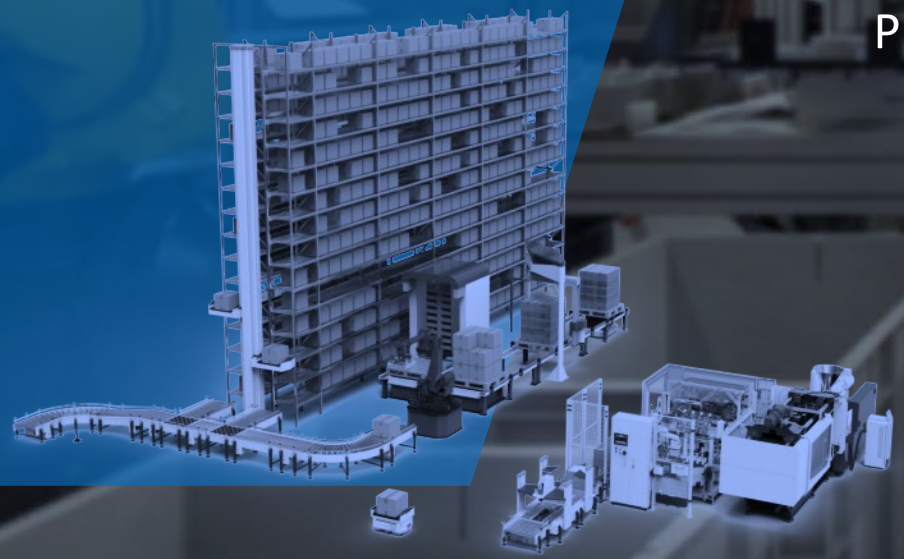


Where we're heading



Factory Automation

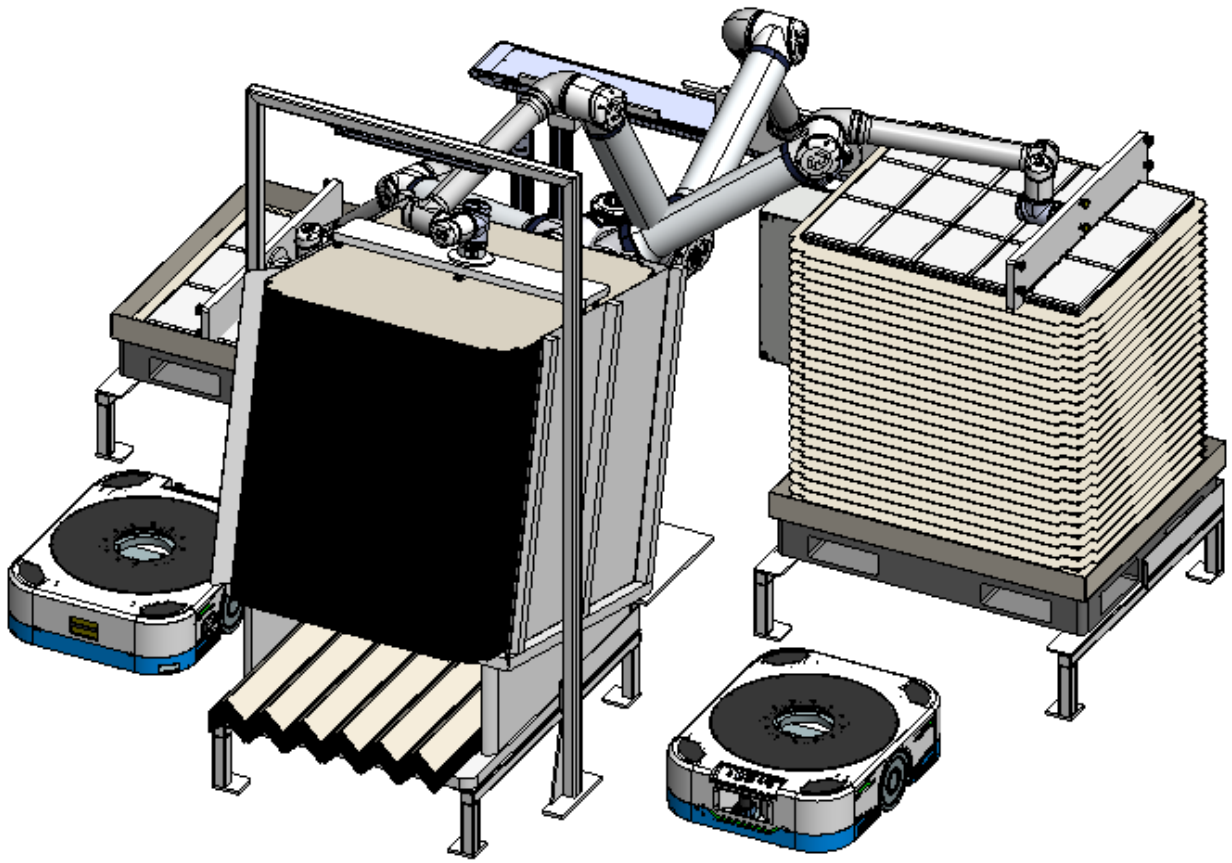
Overall Production lines
Process Automation and Integration

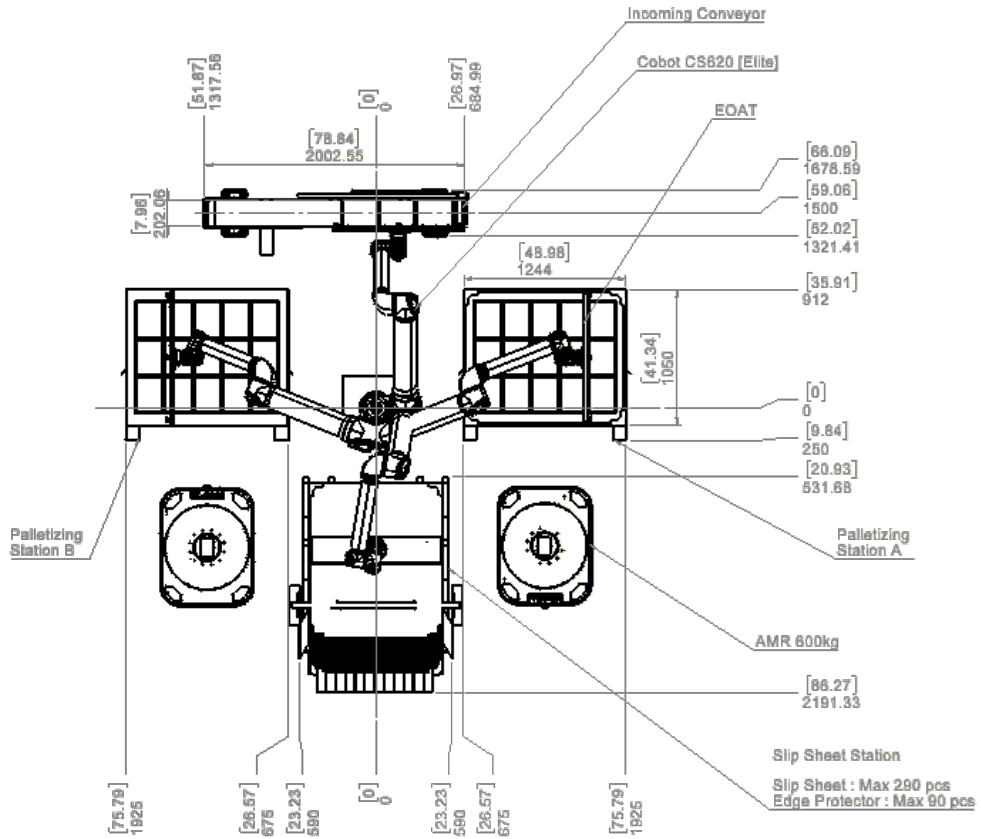


StackTeck Automation

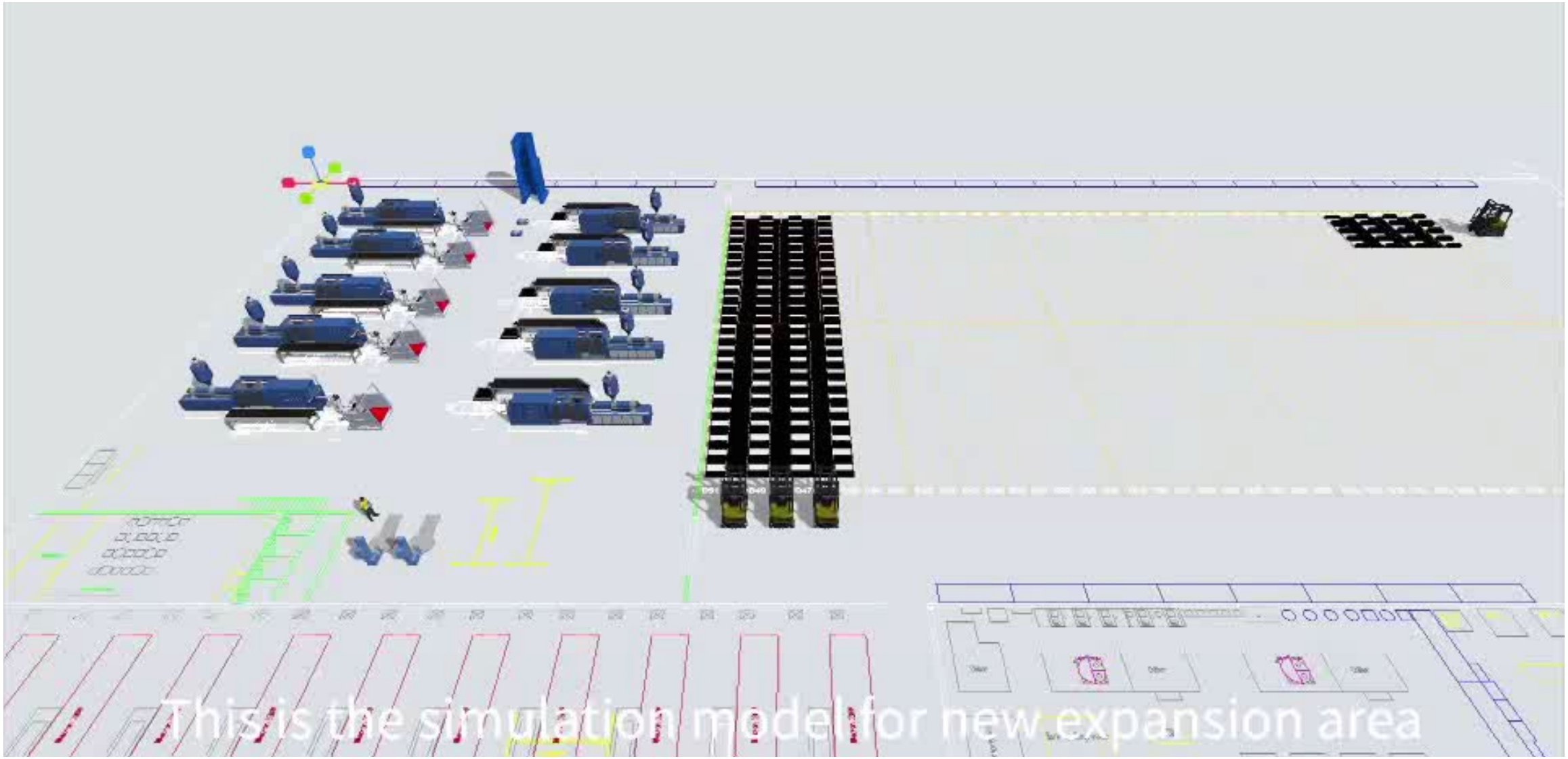
Where we're heading

Where we're heading





Where we're heading



Where we're heading

Synergy with Global Teams

We have global teams, consisting of YUDO, ABIMAN Engineering,
and Studio 3S affiliated with YUDO Group which has been established since 1980.

YUDO

Global no.1
Hot runner systems

ABIMAN ENGINEERING

Total Automation engineering
solution providers

Studio 3S

Customized and flexible
automated logistics solutions

Thank You

Contact us:
Phone: 1-888-700-8555

Website: www.stackteck.com

StackTeck