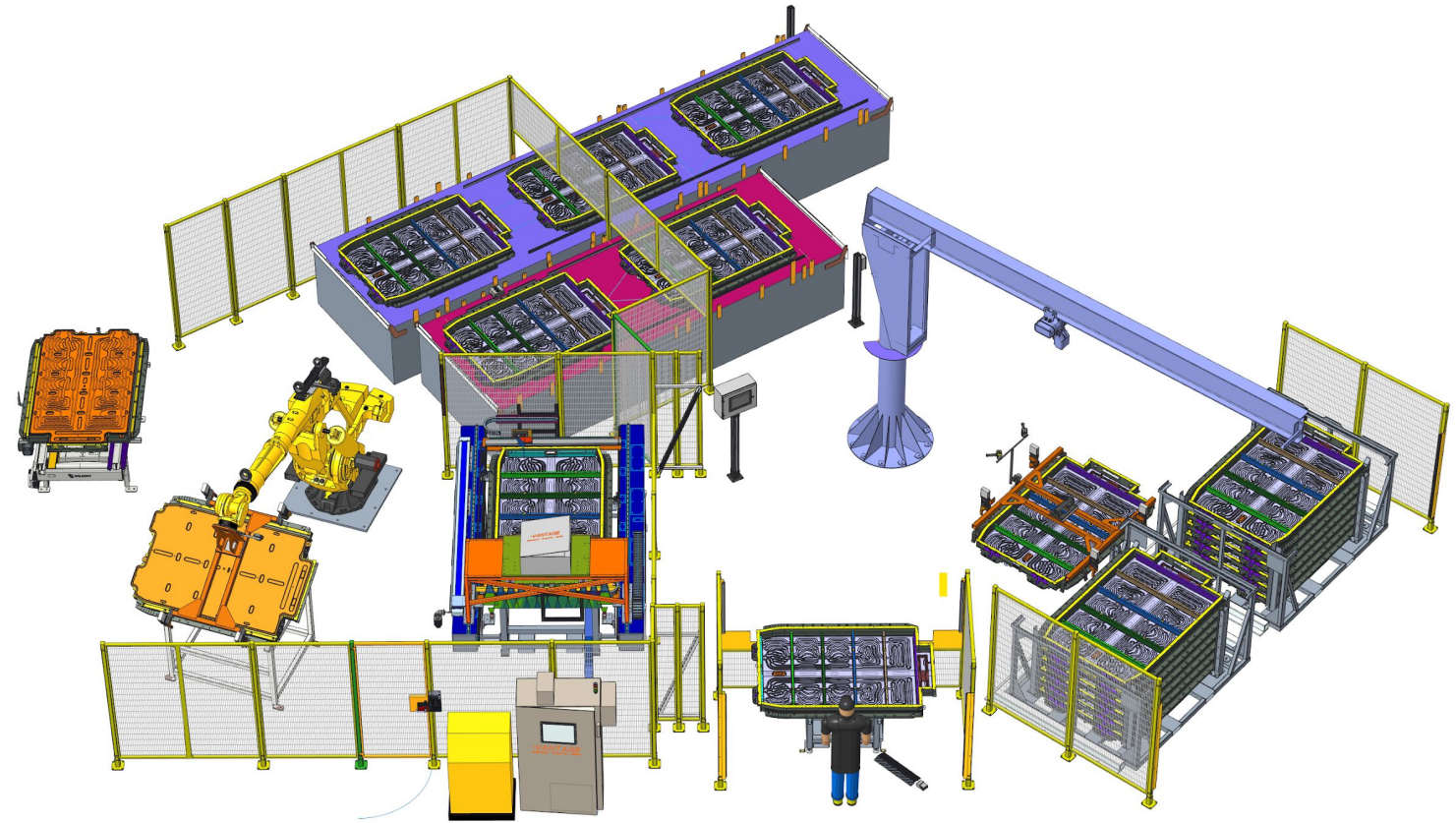


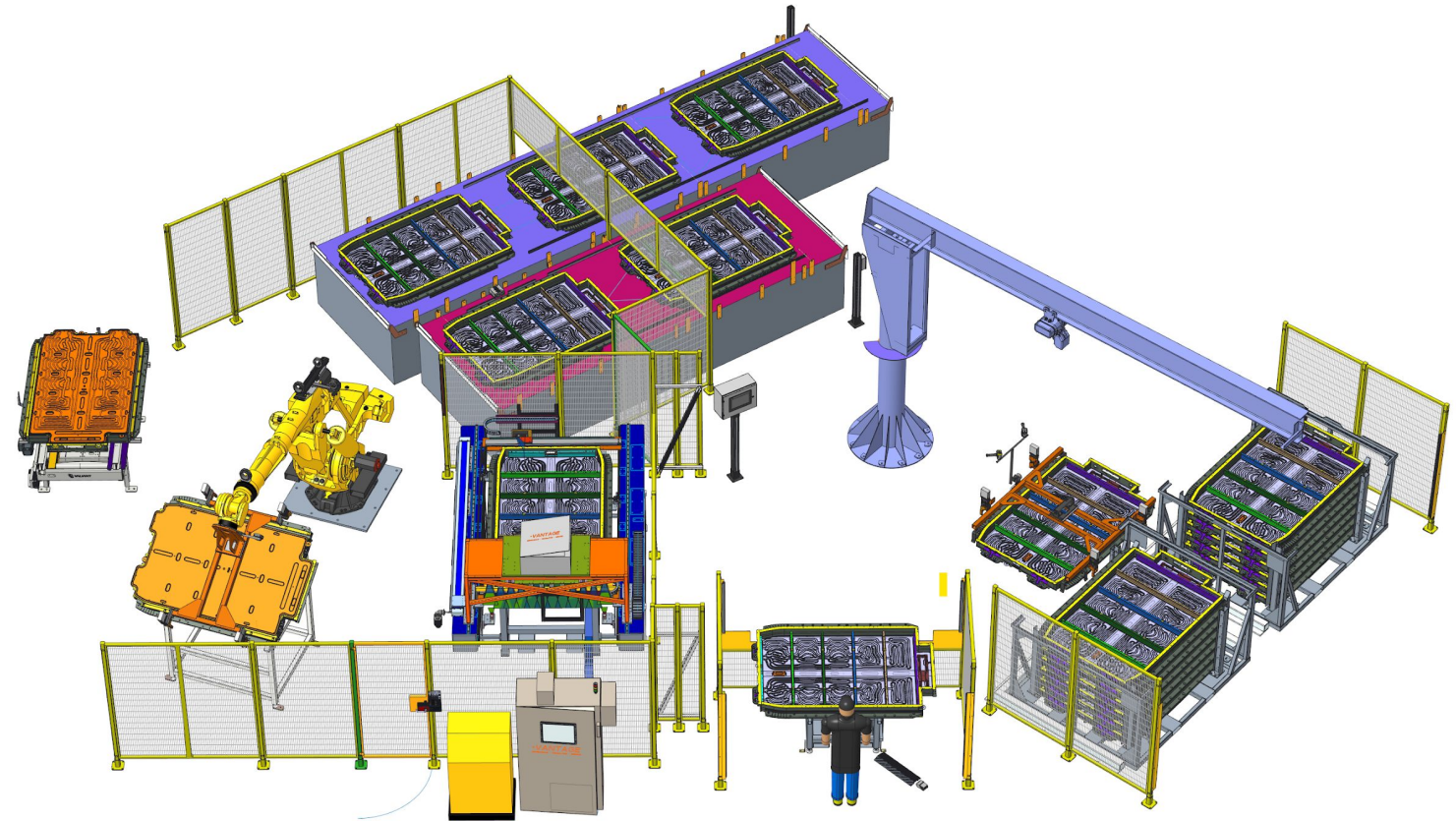
## +Vantage Case Study: Electric Vehicle Solutions

Battery Tray End of Line 3D Inspection  
& Automatic Pack Out Cell



Automation Made Seamless

- Parts:
  - Battery Tray
- Customer Problem:
  - Large Parts with Complicated Geometry
  - A large number of inspection points required
  - Required ergonomic manual inspection station
- The project:
  - Part are introduced into cell with powered belt conveyor. Cell utilizes robotic material handling. After part is automatically flipped and oriented a 3D line scan of occurs. Part is either sorted onto a good or reject conveyor. Good parts are moved to a vision inspection station before they are then passed onto to the pack out station.
- Process:
  - Incoming Conveyor
  - Robotic Part Handling
  - Part Flip Station
  - Servo driven 3D Profile Line Scan
  - Vision Inspection



# Electric Vehicle Solutions



## • Components:

### 1. Incoming Station

- Robotic Material Handling

### 2. 3D Profile Line Scan Station

#### • Inspections Include

- Surface Profile/Flatness
- Hole Size/Position
- Various Assembled Components Presence

### 3. Reject Station

- Powered Belt Conveyors
- Part Reintroduction Capable

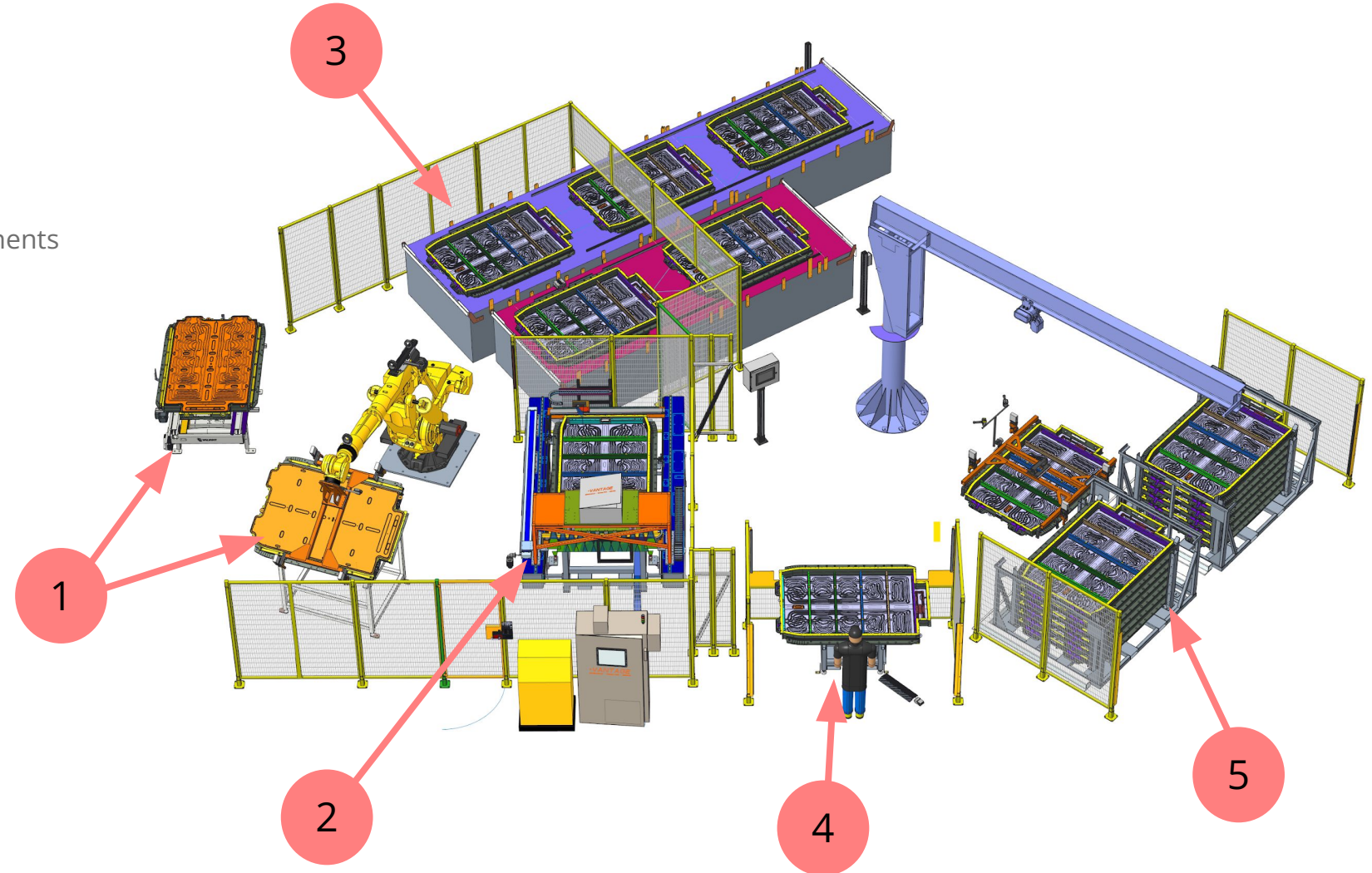
### 4. Manual Vision Inspection Station

#### • Inspections Include

- Quality
- Part Picture Captures

### 5. Manual Packout Station

- Crane Lift Assist
- Packout Pallets



3

+V

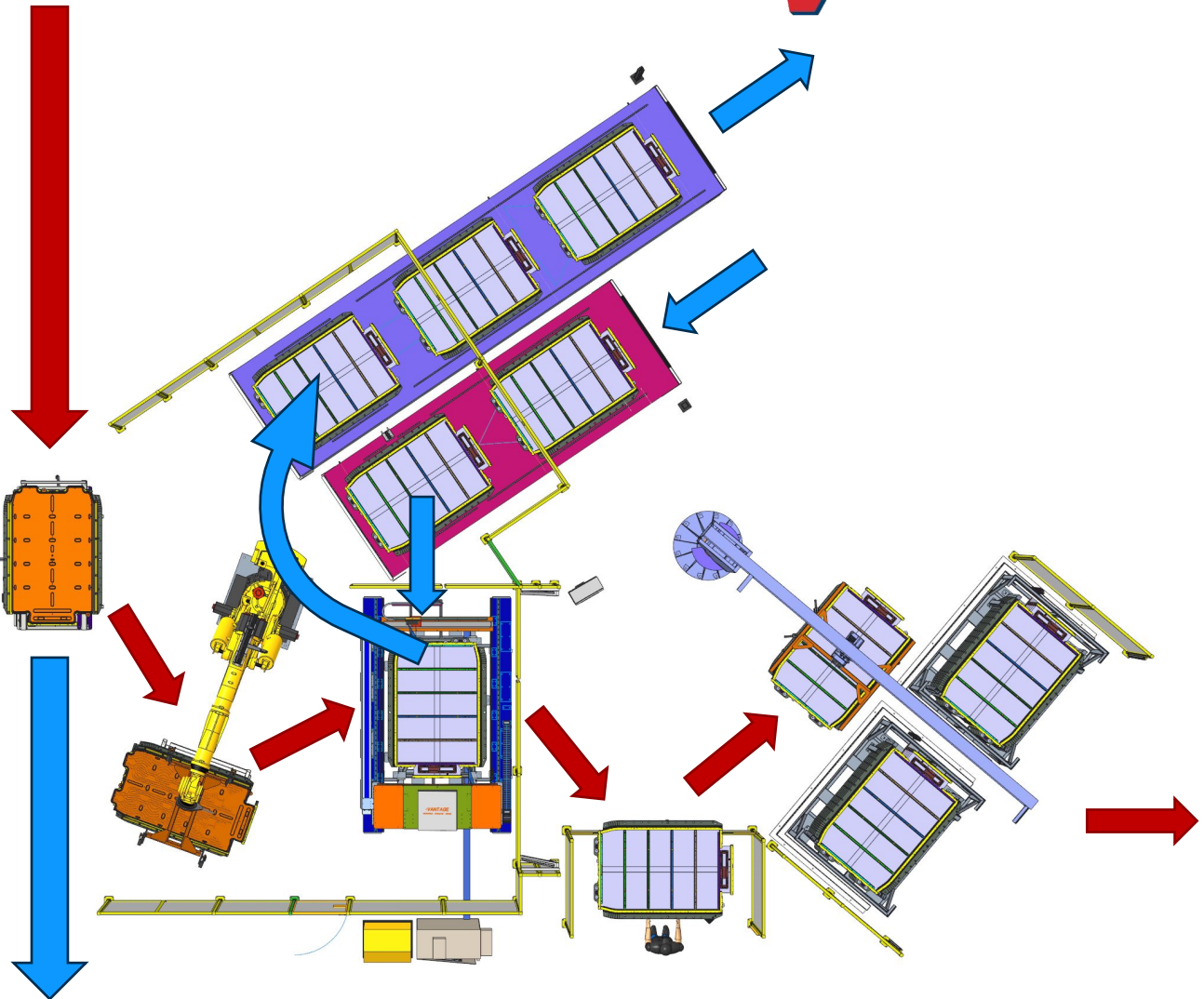
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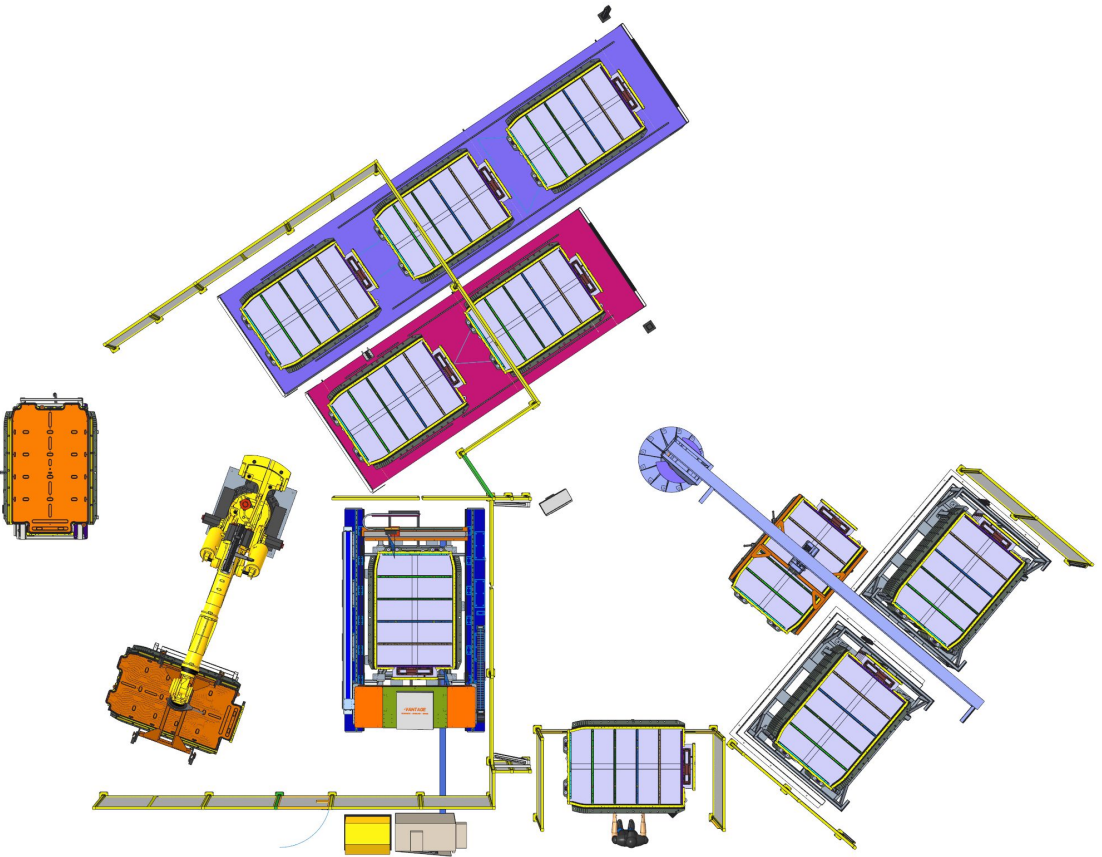
# Electric Vehicle Solutions

**+VANTAGE**

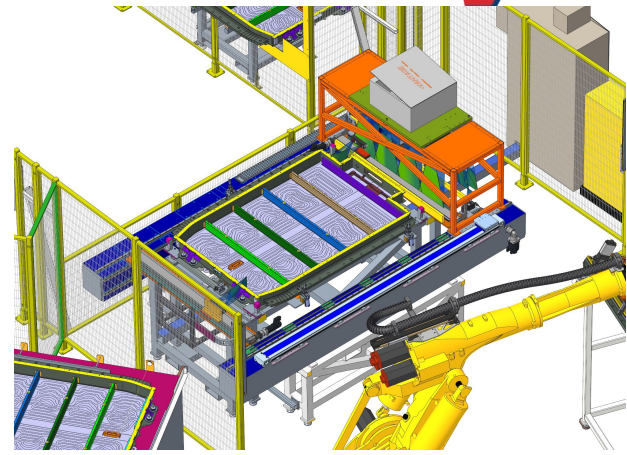
- Process Flow:

- Part stops on Incoming Conveyor.
- Robot picks the part and loads it into the Part Flip Station.
- The flipped part is robot loaded into the Line Scan Gage.
- Bad parts go to the Reject Conveyor.
- Good parts are picked up by Jib Crane and loaded into the Visual Inspection.
- Parts are then picked up by Jib Crane and loaded in the Dunnage.
- Parts may be added via the reintroduce conveyor.

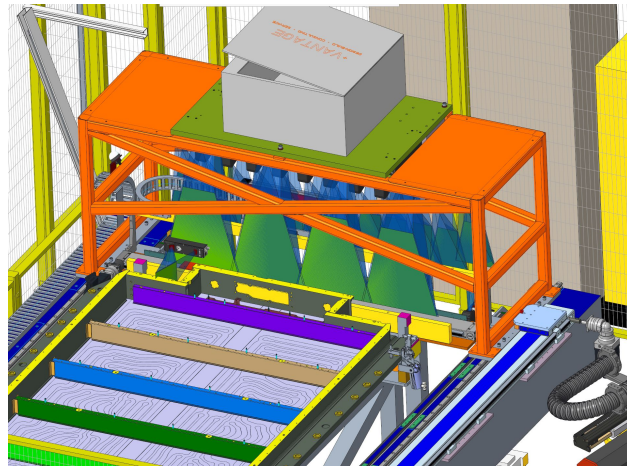




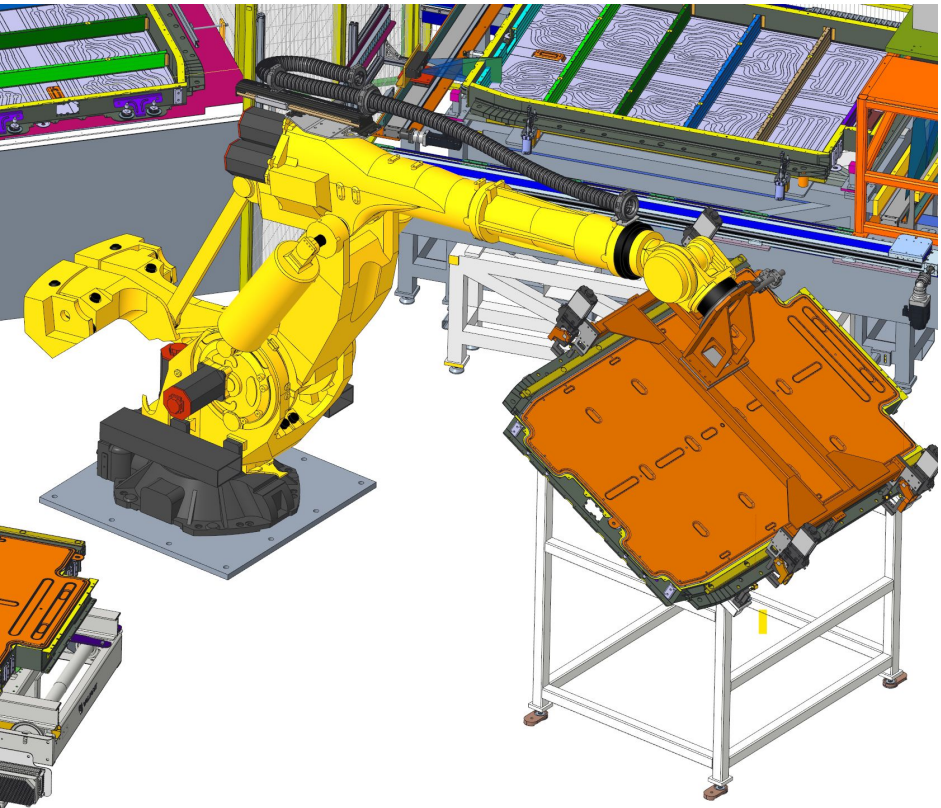
Layout



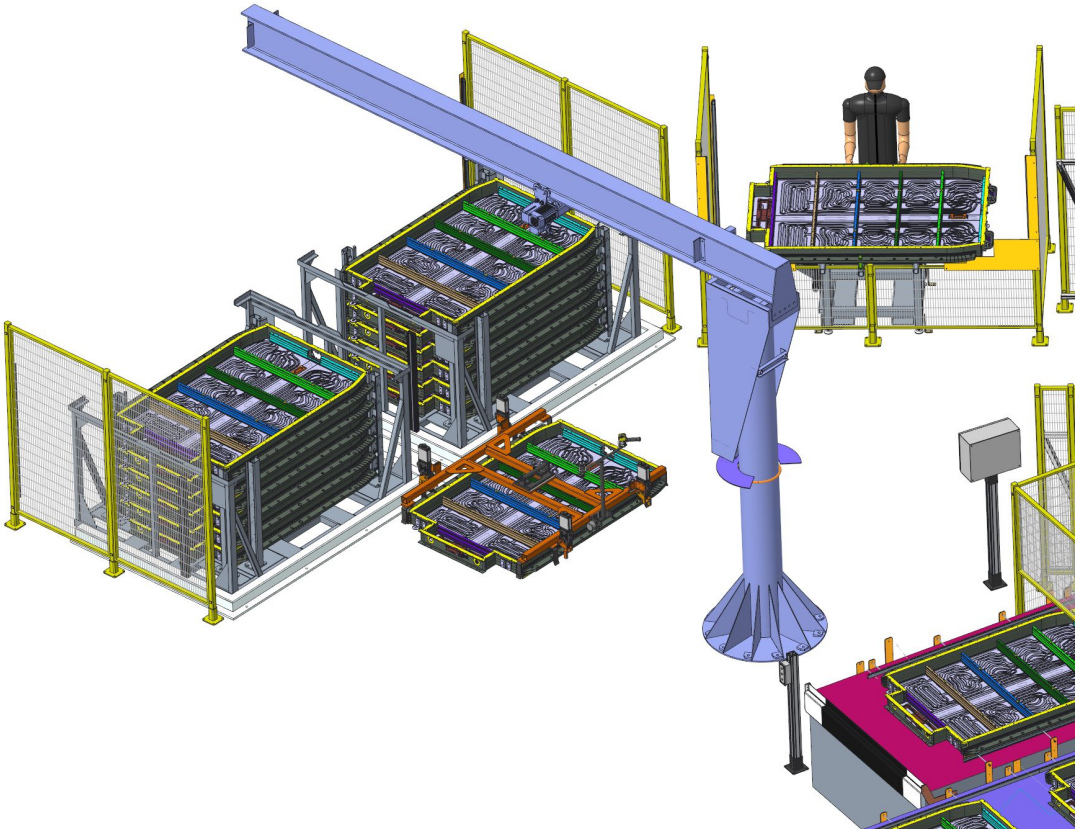
Servo Driven 3D Profile Line Scan



3D Profile Line Scan Gate



3D Line Scan Gate

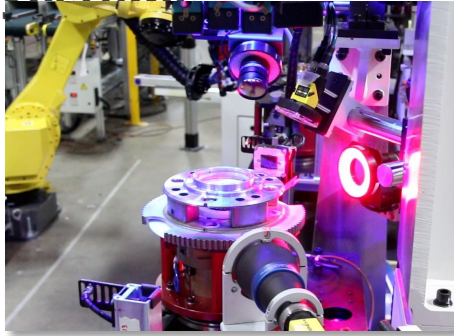


Pack Out Station

# Core Product Overview



## Inspection Systems



Vision, Laser, Pneumatic, Dynamic, Torque, as well as Classification and Identification

## Automation & Robotics



Fully automatic systems to streamline your manufacturing process and increase production

## Systems



Custom design or upgrade/retrofit existing lines with the latest sensors and manufacturing technology

## Engineering & Service



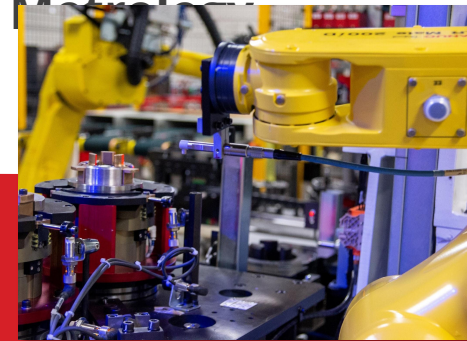
Let the +Vantage team's decades of experience solve your manufacturing challenges

## Assembly Systems



Manual and semi-automatic multi-station assembly systems for pressing, torquing, & riveting

## Industrial



Contact and non-contact gages for precision measurements. In-line and audit room.

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# Global Customer Reach



1,500

MACHINES BUILT

250

YEARS COMBINED EXPERIENCE

12

SYSTEMS INSTALLED IN +12 DIFFERENT COUNTRIES



### USA (HQ)

12651 Newburgh Rd  
Livonia, MI 48150  
tel: [+1 734 432 5055](tel:+17344325055)

### Canada

London, ON Canada  
tel: [+1 226 234 1515](tel:+12262341515)

### Mexico

Micro Parque Finsa Eje 2 #470-2  
Ramos Arizpe, Coah. 25210  
tel: [+52 1 844 270 9389](tel:+5218442709389)

### China

14/F Suncome Cimic Tower  
800 Shangcheng Rd  
Pudong New Distric Shanghai. 200120  
tel: [+86 137 7103 2628](tel:+8613771032628)



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# Company Overview

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## Company Size

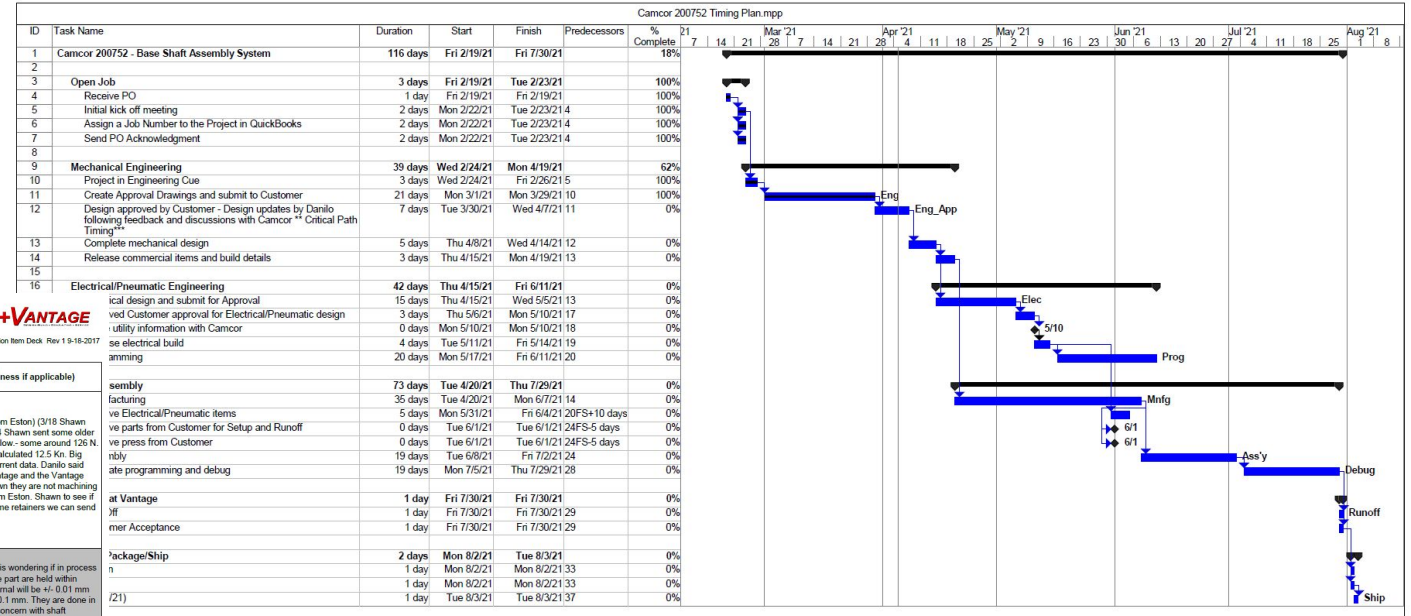
- 70 Employees Globally
- 100,000 sq. ft in Livonia
  - Additional office space globally

## Certifications

- ISO 9001:2019
- Coherix System Integrator
- Fanuc Authorized Integrator
- Q-DAS ASCII Certification
- Schunk Official Partner
- Solartron Orbit 3 Integrator



# Project Management



## +Vantage - Action Item Deck

Project: Camcor 200752 Assembly System

Revised 3/24/21

Item	Operation	Item Description	Key Contact for Item	Actions	Date Open	Target Close date	Actual Close Date	Comments (and note effectiveness if applicable)
5	Press	max expected press force for retainer	Shawn		3/8/2021	3/12/2021		(3/10 Shawn working to get this info from Eston) (3/18 Shawn still waiting for info - will try again) (3/24 Shawn sent some older 2018 and 2019 data - loads are VERY low - some around 126 N) Danilo talked with Promess and they calculated 12.5 Kn. Big difference - Shawn still trying to get current data. Danilo said Shawn could send sample parts to Vantage and the Vantage could send parts to Promess. Per Shawn they are not machining parts now - would need to get parts from Eston. Shawn to see if he can get 5 shafts from Eston and some retainers we can send to Promess)
9	Eng	Shawn to look at in process tolerances for journals - Danilo is considering to use Vees to support journals during press.	Shawn		3/10/2021	3/12/2021	3/24/2021	(3/18 +/- .1 current tolerance. Vantage is wondering if in process spec could be that all diameters on one part are held within tighter tolerance) (Per Bobby Large journal will be +/- 0.01 mm and smaller inside journals can be +/- 0.1 mm. They are done in different operations. Bobby indicating concern with shaft bending. Critical item to get press force info - see item 5 so analysis of potential bending can be performed) (3/24 will close - see item 5 and 15)
11	Feeding system	Vantage using Feeding Concepts for feeding systems. Request deviation from Camcor spec that was sent 3/12. PO has been placed.	Shawn		3/18/2021	3/19/2021	3/24/2021	(3/18 Shawn will investigate. Vantage has developed this project with Feeding Concepts before specification was received.) (3/24 Deviation approved to use Feeding Concepts - commercial issue - Vantage did not have machine spec revision in quoting stage)
12		Bobby requesting to look at feasibility to check retainer height 0.3	Danilo/Todd		3/18/2021	3/31/2021		(3/24 request in in Proposal department - should have by next week)
13	Feeding system	1/2 cubic feet retainers and coffee can of balls	Shawn		3/18/2021	4/1/2021		(3/24 Shawn working with Eston to try and get parts)
14	Shipping/install info	Shawn requesting info re. shipping and utilities	Shelley/Zach		3/22/2021	7/23/2021		(See email sent 3/22/21 from Shawn. Utility information can be provided sooner after electrical design)
15	Eng	FEA Study for press operation	Danilo	Ref Item 5 and item 9				(3/24 Danilo did Preliminary FEA study on current design based on 20Kn and 12.5Kn. If 20Kn force applied, will deform shaft. 12.5Kn would not deform shaft. Is below max yield)



10

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# Proud Partners of:



## Robotics



## Vision Systems



## Marking Systems



## PLC

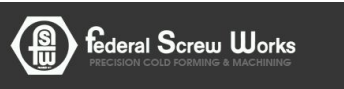


## Torquing/Pressing



# Our Featured Customers

# +VANTAGE



# On-Site Service & Support



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100% Dedication to Customer Service

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Global Support On-Site Representatives

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Quick Response Unit and Down Time Recovery

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Remote Log In Service in a Moments Notice

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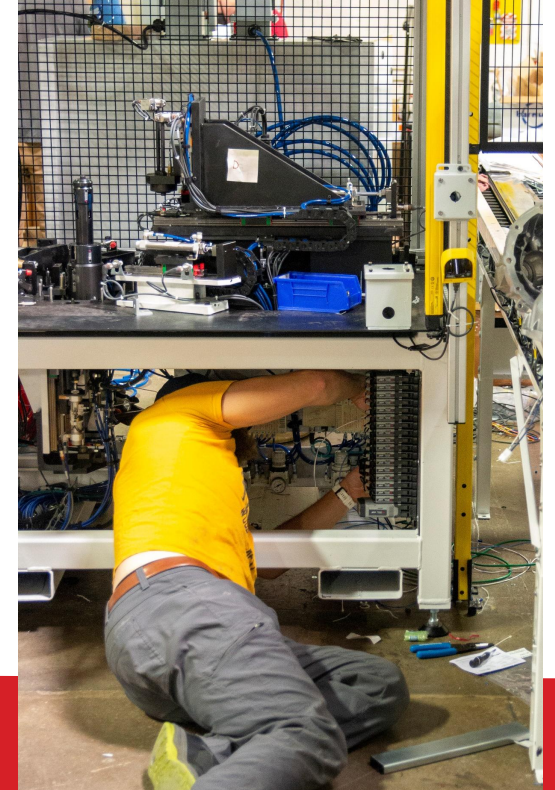
24/7 Service Support

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On-site Contracts Available

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Highly Trained Staff of Engineers & Technicians



## USA

12651 Newburgh Rd  
Livonia, MI 48150  
tel: +1 734 432 5055

Automated Inspection

## Mexico

Micro Parque Finsa Eje 2 #470-2  
Ramos Arizpe, Coah. 25210  
tel: +52 1 844 270 9389

Quality Assurance

## Canada

London, ON Canada  
tel: +1 226 234 1515

Zero Defects

*Thank You for Reading!*

## China

14/F Suncome Cimic Tower  
800 Shangcheng Rd  
Pudong New District Shanghai. 200120  
tel: +86 137 7103 2628

**+VANTAGE**  
Metrology & Assembly Solutions

14

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