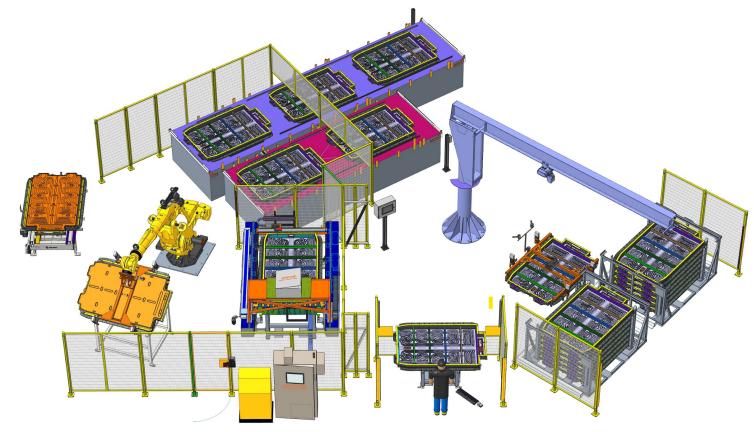


# +Vantage Case Study: Electric Vehicle Solutions

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





#### • Parts:

Battery Tray

#### Customer Problem:

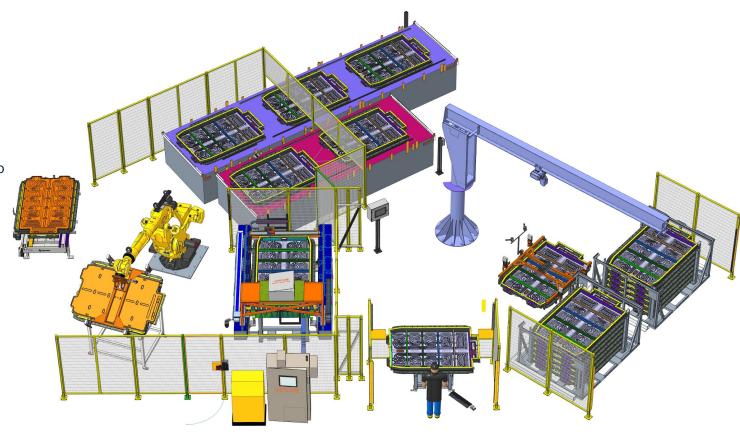
- Large Parts with Complicated Geometry
- · A large number of inspection points required
- Required ergonomic manual inspection station

# • 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.

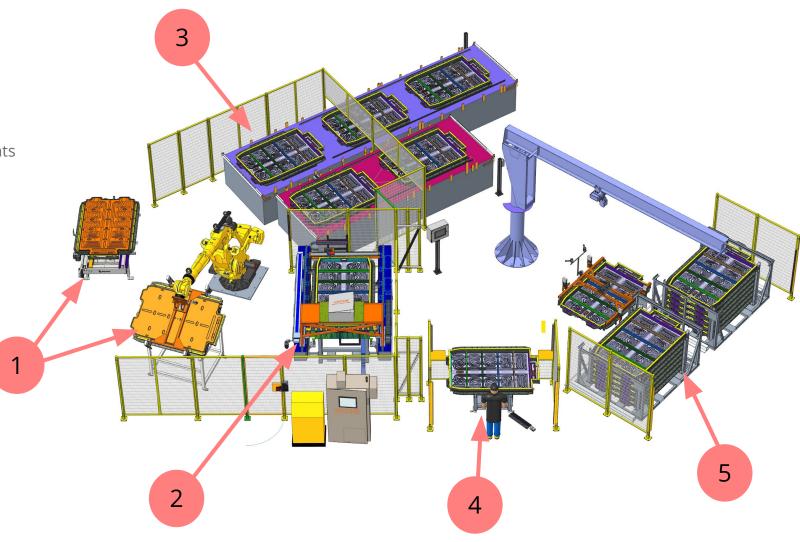
#### • Process:

- Incoming Conveyor
- Robotic Part Handling
- Part Flip Station
- Servo driven 3D Profile Line Scan
- Vision Inspection



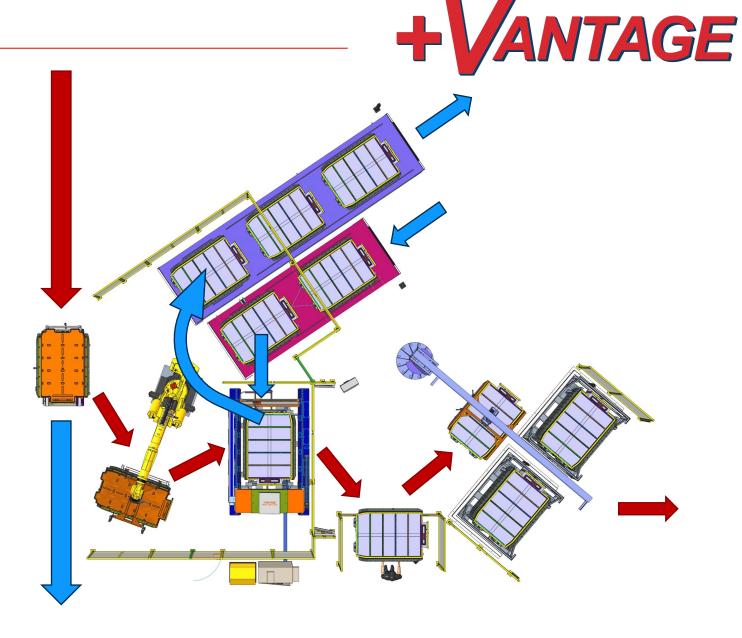


- Components:
  - 1. Incoming Station
    - Robotic Material Handling
  - 2. 3D Profile Line Scan Station
    - Inspections Include
      - Surface Profile/Flatness
      - Hole Size/Position
      - Various Assembled Components Presence
  - 3. Reject Station
    - Powered Belt Conveyors
    - Part Reintroduction Capable
  - 4. Manual Vision Inspection Station
    - Inspections Include
      - Quality
      - Part Picture Captures
  - 5. Manual Packout Station
    - Crane Lift Assist
    - Packout Pallets

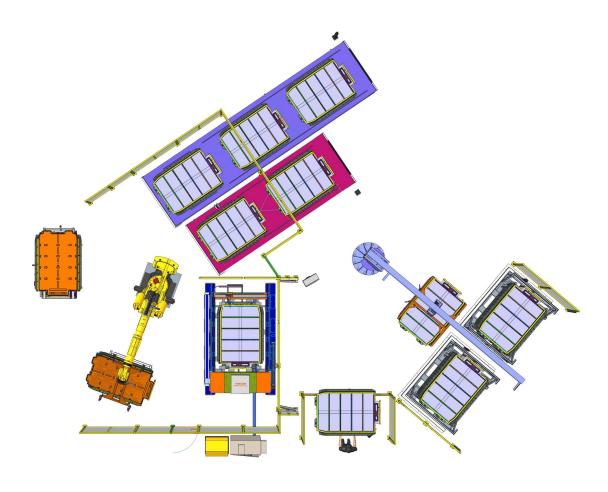


### • Process Flow:

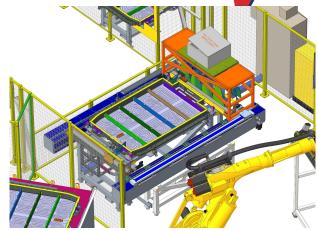
- Part stops on Incoming Conveyor.
- Robot picks the part and loads it into the Part Flip Station.
- The flipped part is robot loaded into the Line Scan Gage.
- Bad parts go to the Reject Conveyor.
- Good parts are picked up by Jib Crane and loaded into the Visual Inspection.
- Parts are then picked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



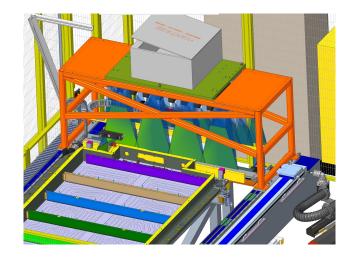




Layout

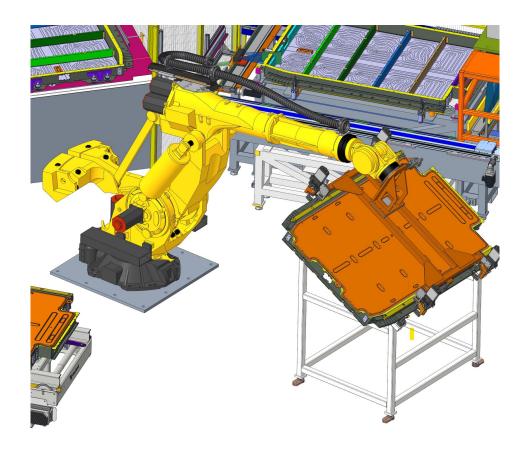


Servo Driven 3D Profile Line Scan



3D Profile Line Scan Gate





3D Line Scan Gate

Pack Out Station

# **Core Product Overview**



## Inspection



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

# **Engineering & Service**



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

### **Automation &**



Fully automatic systems to streamline your manufacturing process and increase production

# **Assembly Systems**



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

**Automation Made Seamless** 

# **Systems**



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

#### **Industrial**



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

# Global Customer Reach



1,500

250

12

MACHINES BUILT

YEARS COMBINED EXPERIENCE

SYSTEMS INSTALLED IN +12 DIFFERENT COUNTRIES





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London, ON Canada tel: +1 226 234 1515 Mexico

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

14/F Suncome Cimic Tower 800 Shangcheng Rd Pudong New Distric Shanghai. 200120

tel: +86 137 7103 2628

# Company Overview



# **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



ID	Task Name		Duration	Start	Finish	Predecessors	% 2 Complete	1   Mar'21   Apr'21   May'21   Jun'21   Jul'21   Aug 7   14   21   28   7   14   21   28   4   11   18   25   2   9   16   23   30   6   13   20   27   4   11   18   25   1
1	Camcor 2	00752 - Base Shaft Assembly System	116 days	Fri 2/19/21	Fri 7/30/2		18%	¥
2								
3	Open J	lob	3 days	Fri 2/19/21	Tue 2/23/2		100%	<u></u>
4		eive PO	1 day		Fri 2/19/2		100%	
5		al kick off meeting		Mon 2/22/21	Tue 2/23/2		100%	<u> </u>
6	Assi	gn a Job Number to the Project in QuickBooks	2 days	Mon 2/22/21	Tue 2/23/2		100%	
7	Sen	d PO Acknowledgment	2 days	Mon 2/22/21	Tue 2/23/2	4	100%	
8								
9		nical Engineering		Wed 2/24/21			62%	•
10	Proj	ect in Engineering Cue	3 days	Wed 2/24/21	Fri 2/26/2	15	100%	
11	Crea	ate Approval Drawings and submit to Customer	21 days	Mon 3/1/21	Mon 3/29/2	10	100%	Eng
12	follo	ign approved by Customer - Design updates by Danilo wing feedback and discussions with Camcor ** Critical Path no***	7 days	Tue 3/30/21	Wed 4/7/2	11	0%	Eng_App
13		plete mechanical design	5 days	Thu 4/8/21	Wed 4/14/2	12	0%	
14		ase commercial items and build details	3 days	Thu 4/15/21	Mon 4/19/2	13	0%	
15			/-				-	T   T   T   T   T   T   T   T   T   T
16	Flectrie	cal/Pneumatic Engineering	42 days	Thu 4/15/21	Fri 6/11/2		0%	
+VANTAGE on Nem Deck Rev 1 9-18-2017		ical design and submit for Approval	15 days	Thu 4/15/21	Wed 5/5/2	13	0%	Elec
		ved Customer approval for Electrical/Pneumatic design	3 days	Thu 5/6/21	Mon 5/10/2	17	0%	
		utility information with Camcor	0 days	Mon 5/10/21	Mon 5/10/2	18	0%	<b>₹</b> 5/10
		se electrical build		Tue 5/11/21	Fri 5/14/2	19	0%	
		amming		Mon 5/17/21	Fri 6/11/2		0%	Prog
ss if appl								
ss if appi	icable)	sembly	73 days	Tue 4/20/21	Thu 7/29/2		0%	
		facturing	35 days	Tue 4/20/21	Mon 6/7/2	14	0%	Mnfq
n Eston) (3/18 Shawn Shawn sent some older owsome around 126 N. Iculated 12.5 Kn. Big rent data. Danilo said age and the Vantage		ve Electrical/Pneumatic items	5 days	Mon 5/31/21	Fri 6/4/2	20FS+10 days	0%	
		ve parts from Customer for Setup and Runoff	0 days	Tue 6/1/21	Tue 6/1/2	24FS-5 days	0%	<b>→</b> 6/1
		ve press from Customer	0 days	Tue 6/1/21	Tue 6/1/2	24FS-5 days	0%	6/1
		nbly	19 days	Tue 6/8/21	Fri 7/2/2	24	0%	Ass'y
		ate programming and debug	19 days	Mon 7/5/21	Thu 7/29/2	28	0%	,De
they are n	ot machining							
Eston. Shawn to see if e retainers we can send		at Vantage	1 day	Fri 7/30/21	Fri 7/30/2		0%	
		Off	1 day	Fri 7/30/21	Fri 7/30/2	29	0%	TRI TRI
		mer Acceptance	1 day	Fri 7/30/21	Fri 7/30/2	29	0%	·
		ackage/Ship	2 days		Tue 8/3/2		0%	
wondering if in process part are held within all will be +/- 0.01 mm 1 mm. They are done in		n	1 day	Mon 8/2/21	Mon 8/2/2		0%	<u> </u>
			1 day	Mon 8/2/21	Mon 8/2/2		0%	Tie
		/21)	1 day	Tue 8/3/21	Tue 8/3/2	137	0%	

Camcor 200752 Timing Plan.mpp

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		(X/10 Shawn working to get this info from Eston) (X/18 Shawn set some older sittle waiting for info - will fly again) (X/24 Shawn sent some older 2016 and X/10 data - loads are VEXF four - some around IZS N, difference - Shawn set ill flying to get current data. Danilo and Shawn could send sample parts to Varlage and the Varlage could send parts fly flowes. Per Shawn they are not machining parts row - would need to get parts from Eston. Shawn to see if the carry of the share of the Varlage could send parts to get the set of the Varlage could send parts for more. Per Shawn they are not machining parts row - would need to get parts from Eston. Shawn to see if the carry of Shaffle from Eston and some relativers we can send to Promesse).
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 4 1 current blerance. Varitage is wondering if in process spec could be that all disameters on one part are held within higher telearces (per Borbly Large pursual with 6+ 4:0.01 mm and smaller inside pursuls can be 4:0.1 mm. They are done in different operations. Bobby indicating concern with shart 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	2040004	(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/-	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	Shellie/Zach	UKA Leaving Life Leaving of Costing? Special Voltage Section Size  Vendor Commer Geology Requirements Voltage Section Size	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 Danillo 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)

Project: Camcor 200752 Assembly System



**Automation Made Seamless** 

# **Proud Partners of:**



**Robotics** 













Vision Systems













Marking
Systems
DATALOGIC
THE VISION IS YOURS



**MECCO**°





**PLC** 



**SIEMENS** 





Torquing/Press ing

































































































# On-Site Service & Support

+VANTAGE

100% Dedication to Customer Service

Global Support On-Site Representatives

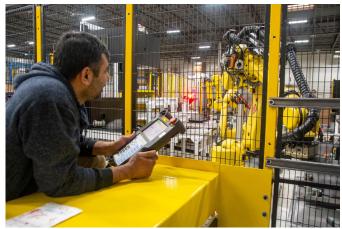
Quick Response Unit and Down Time Recovery

Remote Log In Service in a Moments Notice

24/7 Service Support

On-site Contracts Available

Highly Trained Staff of Engineers & Technicians







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# Thank You for Reading! Zero Defects

# China

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**Automated Inspection** 

**Quality Assurance**