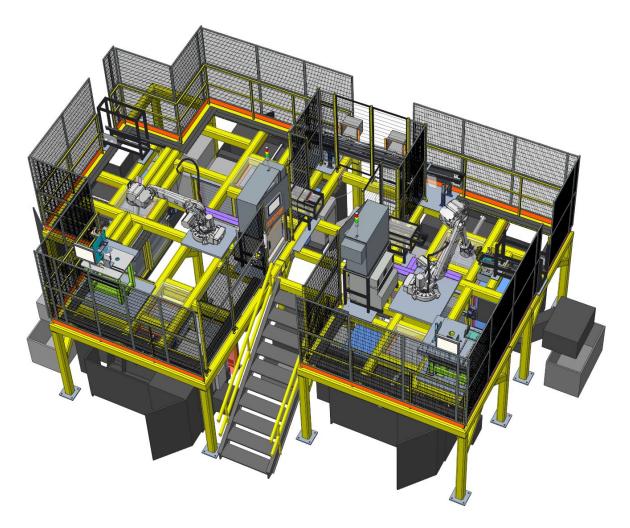


+Vantage Case Study: Material Handling Systems & CNC Automation

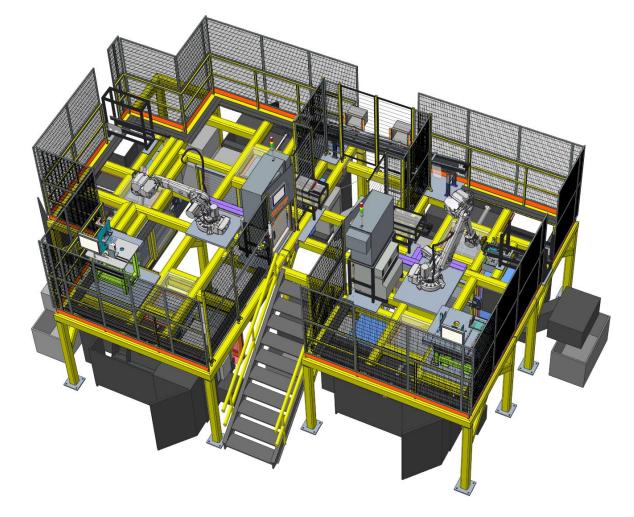
Robot Lathe Tending & Gage Tool Compensation Automation Cell







- Parts:
 - Output Carrier
- Customer Problem:
 - The machining & inspection process was too labor intensive for material handling
 - Tight Tolerances required in process tool compensation for lathes
 - Low available floor space
- The project:
 - Two robots tending 5 lathes located under a custom mezzanine structure equipped with moon roofs for safety access for robot. Above the mezzanine the robots also tend part handling and gages for in process tool compensation feedback.
- Process:
 - Gravity Roller Transfer Conveyor
 - Robotic Part Handling
 - Lathe Machining Tending
 - Automatic Gaging with Tool Compensation



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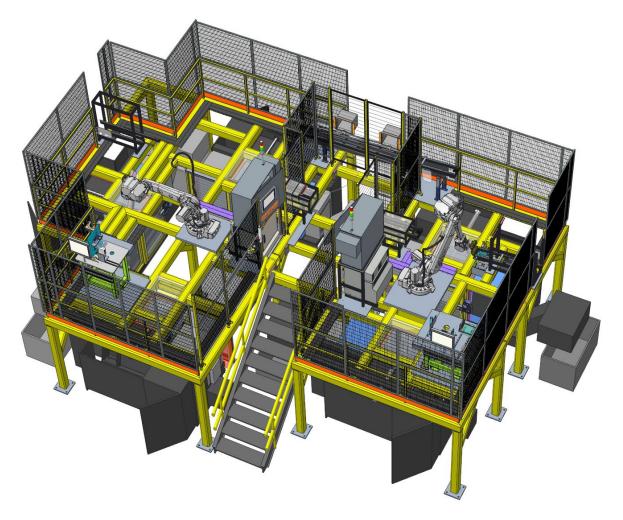
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- Components:
 - Custom Mezzanine Structure with P.E. approval
 - Custom Incoming & Outgoing Gravity Roller Conveyors
 - Custom Gravity Roller Reject Conveyors
 - ABB Robotics
 - Custom EOATs with Schunk Pneumatic Grippers
 - Custom Air Gaging
 - Solartron LVDT Probes
 - In process Tool Compensation
 - Automatic Gage Mastering
 - Safety interlocks
 - RTGC Controls

3

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- Overview:
 - 1. Incoming Station
 - Gravity Roller Conveyor
 - Part Metering
 - 2. Operation One CNC Machining Automation
 - Robotic Material Handling
 - 3. Operation One Inline Gage Station
 - I.D. Air Gaging
 - Flange Thickness Contact Probe Inspection
 - Hole Presence
 - 4. Operation One Reject Station
 - Gravity Roller
 - 5. Operation Part Transfer
 - Gravity Roller Conveyor
 - Part Metering
 - 6. Operation Two CNC Machining Automation
 - Robotic Material Handling
 - 7. Operation Two Inline Gage Station
 - Step Depth Contact Probe Inspections
 - Groove Depth Contact Probe Inspections
 - OD Contact Probe Inspections
 - 8. Operation Two Reject Station
 - Gravity Roller
 - 9. Outgoing Station
 - Gravity Roller Conveyor
 - Part Metering

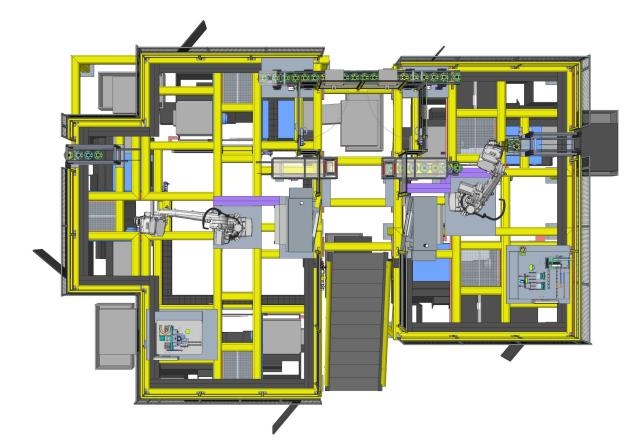
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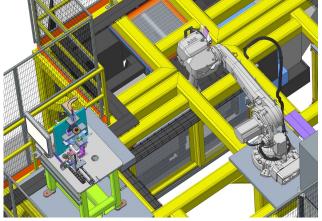




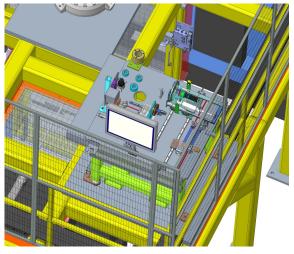
Layout



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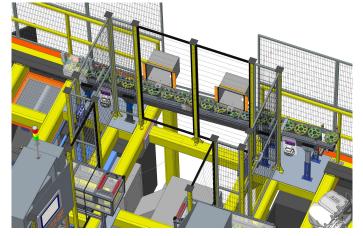


Robotic Lath Tending

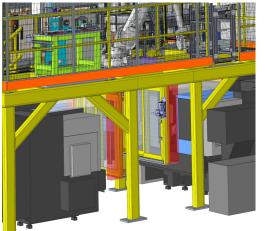


Automatic Gaging





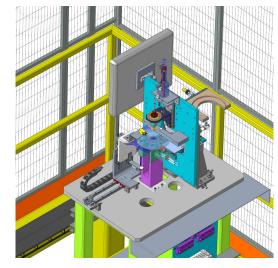
Gravity Roller Part Transferring



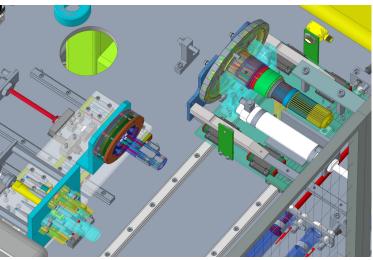


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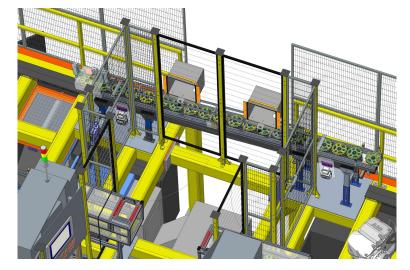


Contact Probe Gaging



Custom Air Spindle Gaging

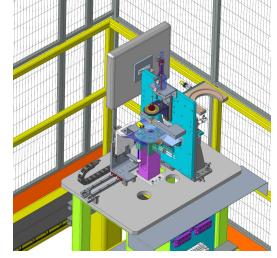




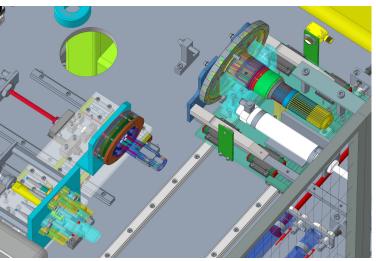
Gravity Roller Part Transferring

7

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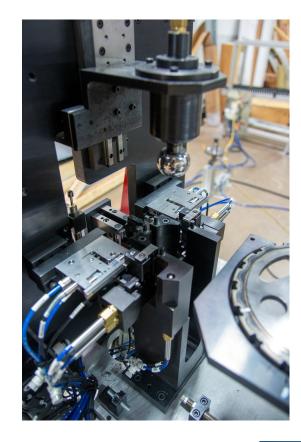
Contact Probe Gaging

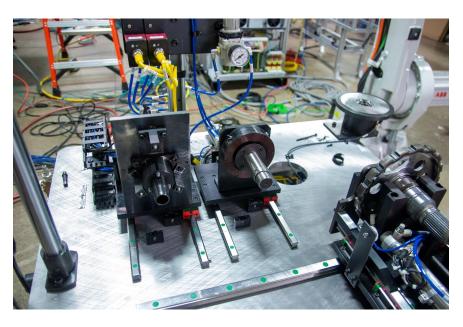


Custom Air Spindle Gaging





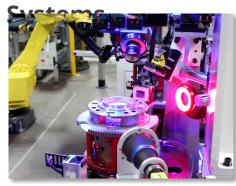




Core Product Overview



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

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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.

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Global Customer Reach

10

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tel: +52 1 844 270 9389

Pudong New Distric Shanghai. 200120 tel: +86 137 7103 2628



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tel: +1 734 432 5055

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





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% 21 Mar 21 Apr 21 May 21 Jun 21 Jun 21 Jun 21 Jun 21 Aug 21 Complete 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 8

Camcor 200752 Timing Plan.mpp

100%

Start

116 days Fri 2/19/21 Fri 7/30/21

3 days Fri 2/19/21 Tue 2/23/21

Finish

Duration

Project Management

								4 R	eceive PO	1 day	Fri 2/19/21	Fri 2/19/21	100%	H					
									itial kick off meeting			Tue 2/23/21 4	100%	1					
									ssign a Job Number to the Project in QuickBooks			Tue 2/23/21 4	100%	1					
								7 Se	end PO Acknowledgment	2 days	Mon 2/22/21	Tue 2/23/21 4	100%						
								8											
									hanical Engineering			Mon 4/19/21	62%						
									roject in Engineering Cue			Fri 2/26/21 5	100%	<u> </u>					
								11 Ci	reate Approval Drawings and submit to Customer			Mon 3/29/21 10	100%		Eng				
								12 De fo	esign approved by Customer - Design updates by Danilo Illowing feedback and discussions with Camcor ** Critical Path	7 days	Tue 3/30/21	Wed 4/7/21 11	0%			Eng_App			
									iming*** omplete mechanical design	E dava	Thu: 4/0/04	Wed 4/14/21 12	0%						
									elease commercial items and build details			Mon 4/19/21 13	0%						
								14 15	elease commercial items and build details	5 days	1110 4/15/21	W0114/15/21 15	0.26						
								10	trical/Pneumatic Engineering	12 days	Thu 4/15/21	Fri 6/11/21	0%						
								TO Elect	ical design and submit for Approval			Wed 5/5/21 13	0%			*	Floc		
]			11/11/11/11	ved Customer approval for Electrical/Pneumatic design			Mon 5/10/21 17	0%						
+Vantage - Action Item Deck Project: C			Camcor 200752 Assembly System				+VANIAGE	utility information with Camcor			Mon 5/10/21 18	0%				5/10			
Re	/ised 3/24/21				1			Q064 Action Item Deck Rev 1 9-18-20				Fri 5/14/21 19	0%				- SN10		
1									amming			Fri 6/11/21 20	0%				Prog		
			Key Center 1			Target Cl	Antun Class		amming	20 days	MOIL 5/17/21	FIT0/11/21/20	0%				Prog		
	item Opera	ion Item Description	Key Contact fo	Actions	Date Open	larget Close date	Actual Close Date	Comments (and note effectiveness if applicable)	sembly	72 day	Tue 4/20/24	Thu 7/29/21	09/						
-							-		facturing		Tue 4/20/21 Tue 4/20/21		0%			¥	Mafe		
													0%				Milig		
						1		(3/10 Shawn working to get this info from Eston) (3/18 Shawn	ve Electrical/Pneumatic items ve parts from Customer for Setup and Runoff		Mon 5/31/21		0%				510		
								still waiting for info - will try again) (3/24 Shawn sent some older 2018 and 2019 data - loads are VERY low some around 126 M	r ve parts from Customer for Setup and Runoff		Tue 6/1/21		0%				→ 6/1		
								2018 and 2019 data - loads are VERY low some around 126 M Danilo talked with Promess and they calculated 12.5 Kn. Big	N. ve press from Customer		Tue 6/1/21		0%				6/1	and the second sec	
		contract contraction in the contract of the second state						difference Shawn still trying to get current data. Danilo said			Tue 6/8/21		0%					Ass'y	
5	Press	max expected press force for retainer	Shawn		3/8/2021	3/12/2021		Shawn could send sample parts to Vantage and the Vantage	ate programming and debug	19 days	Mon 7/5/21	Thu 7/29/21 28	0%					-04	ebug
								could send parts to Promess. Per Shawn they are not machinin parts now - would need to get parts from Eston. Shawn to see if	9										
								he can get 5 shafts from Eston and some retainers we can send	at Vantage		Fri 7/30/21		0%						
								to Promess)	Л	1 day	Fri 7/30/21		0%						Runoff
									mer Acceptance	1 day	Fri 7/30/21	Fri 7/30/21 29	0%					Et .	
												10000							
									Package/Ship		Mon 8/2/21		0%						
								(3/18 +/1 current tolerance. Vantage is wondering if in proces spec could be that all diameters on one part are held within	s n		Mon 8/2/21		0%						
								tighter telerange) (Der Rehhull ange jeurnel will be 1/ 0.01 mm			Mon 8/2/21		0%					1	
9	Eng	Shawn to look at in process tolerances for journals - Danilo is	Shawn		3/10/2021	3/12/2021	3/24/2021	and smaller inside journals can be +/- 0.1 mm. They are done in different operations. Bobby indicating concern with shaft	n /21)	1 day	Tue 8/3/21	Tue 8/3/21 37	0%						Ship
		considering to use Vees to support journals during press.						different operations. Bobby indicating concern with shaft bending. Critical item to get press force info - see item 5 so		<i></i>				2					
								analysis of potential bending can be performed) (3/24 will close see item 5 and 15)							1				- 1
	Feeding	Vantage using Feeding Concepts for feeding systems. Reques	at l				1.	(3/18 Shawn will investigate. Vantage has developed this project with Feeding Concepts before specification was received.) (3/2-	et a			State of Contract of State							
11	system	deviation from Camcor spec that was sent 3/12. PO has been placed	Shawn		3/18/2021	3/19/2021	3/24/2021	Deviation approved to use Feeding Concepts - commercial issu	Je Julian State St	Car an									
		praceu.						- Vantage did not have machine spec revision in quoting stage)		12.1						a de la del de la de			
										- 11									
12		Bobby requesting to look at feasibility to check retainer height 0 0.3	N ⁻ Danilo/Todd		3/18/2021	3/31/2021		(3/24 request in in Proposal department - should have by next week)		All and a second						Contraction of the			
_												And I Have been stated on the second state of		and the second s			A THE R. LEWIS CO.		
12	Feeding	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)		C									
1.5	system	112 cubic reel retainers and conee can or bails	Snawn		3/10/2021	4/1/2021		(3/24 Shawn working with Eston to by and get parts)									Contra Cont		
																		Hilling States	
14	Shippin install in	Shawn requesting info re. shipping and utilities	Shellie/Zach	KTA Leaving KTA Leaving at Control Control Special Requirements Voltage Stactrical Service Size	3/22/2021	7/23/2021		(See email sent 3/22/21 from Shawn. Utility information can be provided sooner after electrical design)	A REAL PROPERTY AND INC.										
L															the second s	Concession of the local division of the loca			
								(204 Desile did Desiminant EEA study on our of the						Later Street Street					and the second division of
15	Eng	FEA Study for press operation	Danilo	Ref Item 5 and item 9				(3/24 Danilo did Preliminary FEA study on current design base on 20Kn and 12.5Kn. If 20Kn force applied, will deform shaft.	d						1000	Contraction of the local division of the loc		and the second second	
								12/5Kn would not deform shaft. Is below max yield)		COLUMN AND IN COLUMN								Contraction of the local division of the loc	
_											-								

ID Task Name

Open Job

Camcor 200752 - Base Shaft Assembly System

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Kawasaki Robotics KUKA JAJ Quality and Innovation



Marking Systems DATALOGIC THE VISION IS YOURS KEYENCE MECCO°

TELESIS

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VIDEOJET.
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Allen-Bradley

SIEMENS

PLC





Ingersoll Rand

Torquing/Press

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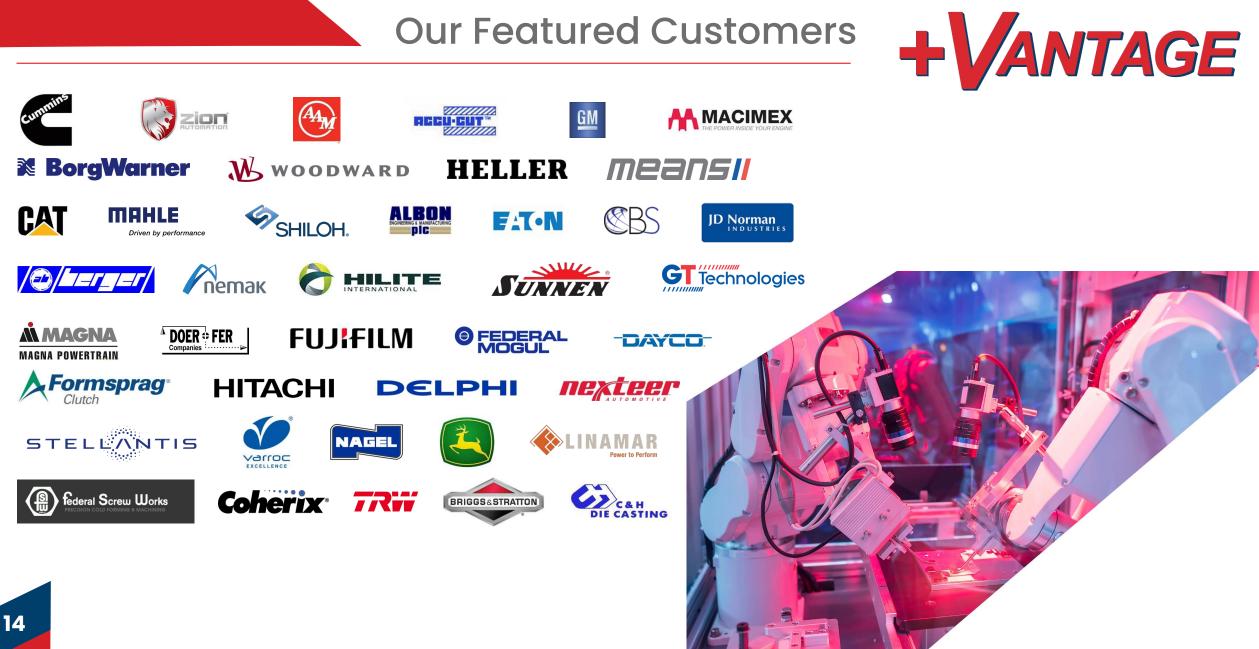






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On-Site Service & Support

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

15

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On-site Contracts Available

Highly Trained Staff of Engineers & Technicians











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Automated Inspection

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

Thank You for Reading! Zero Defects

China

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