



Proposal For

**Battery Assembly & Inspection Line**

*Unless otherwise agreed to in writing, all concepts and information contained within this proposal are to remain confidential between Briggs & Stratton and Alliance Automation, LLC.*

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## 1.0 SYSTEM SUMMARY

1.1 Alliance Automation will provide a turnkey cell per the supplied [REDACTED] "RFQ - 2.7kW Assembly Automation and Inspection" dated 7/12/21 along with details in this proposal.

1.2 The system will run the following CMA configurations:

1.2.1 18-650-24P, 18-650-29P, 18-650-32P

1.2.2 21-700-15P, 21-700-28P

1.2.3 Optional: Split CMA, 18-650-32P and 21-700-28P Configurations

1.3 Each CMA configuration will include the following parts:

1.3.1 (1) Top (Positive) Cell Holder – 1 for 18-650, 1 for 21-700

1.3.2 (1) Bottom (Negative) Cell Holder

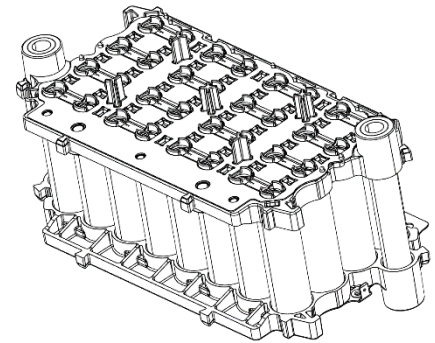
1.3.3 (1) Top (Positive) Collector Plate

1.3.4 (1) Bottom (Negative) Collector Plate

1.3.5 (XX) Cell

1.3.6 (2) Sleeves

1.3.7 (5g) Adhesive



1.4 System Capacity

1.4.1 Days Per Week: 5

1.4.2 Shifts Per Day: 2

1.4.3 Hours Per Shift: 7.5

1.4.4 Uptime Percentage: 95%

1.4.5 Planned Scrap Rate: 1%

1.4.6 Planned OEE for Cycle time calculation: 85%

1.4.7 Weekly Volume Requirement: 7,500 net good pieces

1.4.8 Machine Cycle = 30 seconds part to part (Non-split CMA) with 32 cells.



1.5 The system will hold parts to build 60-90 units (excluding cells).

1.6 Equipment installation will be at the [REDACTED] facility located in [REDACTED].

1.7 The equipment will require (1) material loading operator.

1.8 Estimated floor space will be 48' Long x 18" Wide.

1.9 Required Facility Power: 480VAC, 60Hz, estimated 200 amps required.

1.10 [REDACTED] will supply Fanuc robots and robot components, Keyence laser equipment, fuse/bonder machines, glue supply, operator interface (HMI) units, glue inspection cameras and related lighting.

## 2.0 SYSTEM DESCRIPTION

- 2.1 The assembly system will consist of a Glide Line palletized conveyor system. The conveyor system will include (35) 240mm x 320mm pallets. Each pallet will have a part fixture.
- 2.2 Pallets will automatically transfer from station to station. The assembly status of each part will be tracked using an RFID tag on the pallet. Soft-Stop pallet stops will be utilized at all pallet stops
- 2.3 The assembly line will run in batch quantities. Some change over may be required, and cell run out will be required when changing from 18-650 cells to 21-700 cells.
- 2.4 The pallet conveyor will have pneumatic lift and locate units at all stations requiring precision work. The lift and locate units provide a repeatability of  $\pm .05\text{mm}$ .
- 2.5 The cell will be controlled with a single Allen-Bradley Compact Logix Safety programmable logic controller (PLC).
- 2.6 The PLC and associated electrical components will be mounted inside of two NEMA 12 electrical disconnect enclosures, one low volt and one high volt. The location will be confirmed during design review.
- 2.7 System inputs and outputs will be communicated to the PLC using remote input/output modules.
- 2.8 Three [REDACTED] supplied panel PC's with touch screen displays will be used for human machine interface (HMI). Each HMI will run Ignition software. The HMI locations can be discussed and approved during the design approval.
- 2.9 Mistake Proofing – sensors will be used at any location where part presence or absence must be verified.
- 2.10 Guarding
  - 2.10.1 The system guarding will consist of free-standing wire mesh panels.
  - 2.10.2 The system will be provided with a safety interlocked access doors. The door locations will be agreed upon at project kick off meeting. All LOTO instructions and placards will be provided.

## 3.0 SYSTEM COMPONENTS

### 3.1 Station 1 – Negative Holder Load

#### Process

1. Pallet transfers into station. Pallet is lifted and located.
2. Bottom holder is picked from a dial table nest, rotated 90°, and placed on pallet.
3. Note: Sensors will be used to detect correct part type and correct part orientation.

#### Hardware

- (1) Six station rotary index table – each rotary nest holds 27 parts (24" tall), a linear actuator raises stack after each pick to provide a single pick location.
- (1) Safety Light Curtain – allows operator to safely load parts without stopping assembly system.
- (1) Pick and Place Unit – (1) linear actuator, (1) pneumatic vertical cylinder, (1) 90° rotate cylinder, (2) pneumatic grippers.
- (4) Inspection Sensors
- (1) Reject Tote with High Level Sensor

### 3.2 Station 2 – Cell Load

#### Process

1. Operator loads full boxes of cells on conveyor. Box lids must be positioned under hold down bar. Powered conveyor moves boxes to robot pick location.
2. Robot #1 with a Magswitch EOAT picks all cells in a box in a single cycle and places cells into a dispense hopper. The robot EOAT will contain insulator tops and release top into empty box container. A pneumatic cylinder pushes the empty cell box off the conveyor into a container.
3. Cell dispense hopper uses a 3-position servo controlled dispense wheel to dispense a single cell onto an indexing conveyor. The dispense wheel stops at each position. At position #2, the cell internal resistance is measured and tracked as it moves down the indexing conveyor.
4. The cell is pushed onto a waterfall holder when the cell reaches the correct offload area.
5. Waterfall groups 1-4 will hold approximately 200 cells per waterfall and are dedicated for CMA assembly. Waterfall groups 5-8 will hold approximately 150 cells per waterfall and are dedicated for manual unload. Waterfall 9 will hold approximately 150 cells and is dedicated to rejected cells.
6. Robot #2, a delta robot, with a vacuum pick will be used to load cells one at a time from a waterfall to the bottom holder located on the conveyor pallet. The polarity of each cell is measured prior to robot pick. If required, the robot will rotate the cell before placing into the holder.
7. Notes:
  - a. Any tooling or surface that contacts a cell will be made from nonconductive material.
  - b. Each cell group (waterfall) will be designed to allow run out of cells to an operator access area.

## Hardware

- (1) Cell dispense magazine – holds 150-200 cells
- (1) Servo controlled cell dispense wheel
- (1) Hioki Battery Tester
- (1) Servo controlled cleated conveyor
- (9) Cell waterfall holders
- (4) Cell polarity test using probes and pneumatic cylinders
- (1) Fanuc M2iA/3A six axis delta robot
  - (1) Vacuum suction cup pick
- (1) Fanuc M20iD/25 six axis robot
  - (1) End of Arm Tool - (2) Magswitch, (2) Magswitch shoes, (2) Insulator Lid Grippers
- (1) Powered Inbound Full Cell Box Conveyor
- (1) Empty Box Pusher Cylinder and Tooling
- (1) Scrap Bin for Empty Cell Box and Insulator Tops

### 3.3 Station 3 – Sleeve Load

#### Process

1. Pallet transfers into station. Pallet is lifted and located.
2. Sleeves are dispensed and escaped one at a time using a vibratory bowl feeder.
3. An X,Y,Z linear actuator will pick, rotate 90°, and place a single at a time to a bottom holder located on the conveyor pallet. This process repeats for the second sleeve. The fixture on the pallet will have post tall enough to support the sleeve during pallet transfer.

#### Hardware

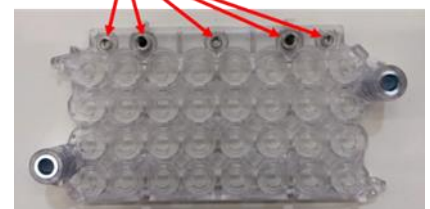
- (1) Vibratory bowl feeder - with vibratory inline, part escapement and sound enclosure.
- (1) Pick and place unit - with (3) linear actuators, (1) 90° rotate cylinder, (1) vacuum cup gripper.

### 3.4 Station 4 – Positive Holder Load

#### Process

1. Pallet transfers into station. Pallet is lifted and located.
2. Top holder is picked from a dial table nest and moved to inspection area.
3. Camera inspects for (5) metal inserts, part type, and part orientation.
4. If inspection fails, part is dropped into reject tote. A high-level sensor on the reject tote will turn on an alarm when the reject tote needs emptied.

5 inserts need to be confirmed



5. If inspection passes, part is placed rotated 90° and placed on top of cells located on pallet.

#### **Hardware**

- (1) Six station rotary index table – each rotary nest holds 27 parts, linear actuator raises stack after each pick to provide a single pick location.
- (1) Safety Light Curtain – allows operator to safely load parts without stopping assembly system.
- (1) Pick and Place Unit – (1) linear actuator, (1) pneumatic vertical cylinder, (1) 90° rotate cylinder, (2) pneumatic grippers.
- (1) Inspection Camera.
- (1) Reject Tote with High Level Sensor.

### **3.5 Station 5 – Positive Plate Load**

#### **Process**

- 1. Pallet transfers into station. Pallet is lifted and located.
- 2. Top plate is picked from a dial table nest, rotated 90°, and placed on top holder.
- 3. Note: Sensors will be used to detect correct part type and correct part orientation.

#### **Hardware**

- (1) Six station rotary index table – each rotary nest holds 60 parts, linear actuator raises stack after each pick to provide a single pick location.
- (1) Safety Light Curtain – allows operator to safely load parts without stopping assembly system.
- (1) Pick and Place Unit – (1) linear actuator, (1) pneumatic vertical cylinder, (1) 90° rotate cylinder, (2) vacuum suction grippers.
- (4) Inspection Sensors.
- (1) Reject Tote with High Level Sensors.

### 3.6 **Station 6 – Glue Positive Plate and Holder**

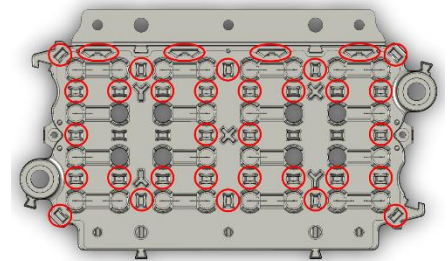
#### **Process**

1. Pallet transfers into station, pallet is stopped.
2. Sleeves and plate are independently clamped.
3. Robot with (3) glue tips dispense up to 38 points of glue using 13 dispense cycles. One glue dispense tip is fixed and two glue dispense tips will be on linear actuators in order to adjust the distance between glue dispense location.
4. Part clamps and plate clamps retract.

#### **Hardware**

- (1) Fanuc SR-12iA SCARA Robot w/R30iB Compact Plus Controller
- (1) Glue Dispense Controller
- (3) Glue Dispense Valves
- (2) Glue Tip Linear Actuators
- (1) 5 Gallon SS Pail
- (1) Glue Purge Station
- (1) Air Accumulation Tank
- (2) Part & Plate Clamp Cylinders and Tooling

Positive Plate



### 3.7 **Station 7 – Cure CMA Positive Side**

#### **Process**

1. Cure tunnel entrance door is raised.
2. Pallet enters cure tunnel and entrance door is lowered, part is clamped, UV light turns on, Cure time is started.
3. After XX seconds the UV light turns off, the part is unclamped, the exit door on cure tunnel raises, pallet is released.
4. Note: System quoted using Loctite 3106 adhesive.

#### **Hardware**

- (1) LED System Controller
- (1) LED Flood UV Light
- (1) UV Light Shroud Tunnels
- (2) Pneumatic cylinder and door
- (1) Part & Plate Clamp Cylinders and Tooling





### 3.8 **Station 8 – Flip Part Over**

#### **Process**

1. Pallet transfers into station. Pallet is lifted and located.
2. Pneumatic cylinders are used to pick CMA off of pallet, flip CMA, and place CMA Negative side up.

#### **Hardware**

(1) Pick and Place with Rotate Unit – (1) Pneumatic Horizontal Cylinder, (1) Vertical Cylinder, (1) Rotate Cylinder, (2) Gripper Cylinders, (2) Gripper Fingers, (1) Mounting Hardware

### 3.9 **Station 9 – Negative Plate Assembly and Load**

#### **Process**

1. An operator manually loads Negative Plates to a fixtured indexing conveyor. Estimated queue of 60 plates.
2. Pick and place unit picks plates from end of indexing conveyor and places plate on pallet.
3. Note: Sensor will be used to verify tabs are present on plates.

#### **Hardware**

(1) Indexing Conveyor  
(124) Part Fixtures  
(4) Tab Present Sensor

#### ***Automated Assembly Option***

#### **Process**

1. A vibratory bowl feeder presents a single rivet to a dead nest. A pneumatic pick and place unit picks one rivet and places on dial nest, the process repeats for second rivet. Dial table indexes.
2. A vibratory bowl feeder presents a single tab to a dead nest. A pneumatic pick and place unit picks one tab and places on dial nest, the process repeats for second tab. Dial table indexes.
3. SCARA robot with suction cups picks and places a bottom plate from a parts dial nest and places over rivet and tab sets waiting on the assembly dial. Dial table indexes
4. Two overhead press cylinders with crimp tooling lower and curl the rivet head. Dial table indexes.
5. Assembled bottom plate is picked from assembly dial. Sensors verify that tabs are in place. If tabs are not detected the bottom plate will be dropped into a reject tote. If tabs are detected the plate will be placed on to the pallet.
6. System can assemble 18-650 and 21-700 plates at the same time.

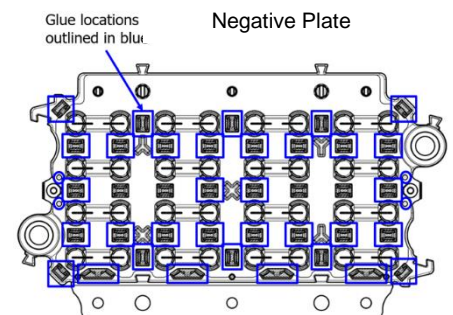
#### **Hardware**

- (1) Twelve station rotary index table – for plate assembly.
- (2) Vibratory Bowl Feeder – with inline, part escapement, and dead nest.
- (2) Part Pick and Place Units – pneumatic with horizontal cylinder, vertical cylinder, gripper cylinder, and mounts
- (2) Six station rotary index table – for plate loading. Each nest will be keyed to prevent parts from being loaded incorrectly, each rotary nest holds 60 parts, linear actuator raises stack after each pick to provide a single pick location.
- (1) Fanuc SR-12iA SCARA Robot
- (1) Robot End of Arm Tool – with (2) suction cups
- (1) Safety Light Curtain – allows operator to safely load parts during normal operations.
- (1) Assembly Dial to Pallet Pick and Place Unit – (1) linear actuator, (1) pneumatic vertical cylinder, (1) rotate cylinder, (2) vacuum suction grippers.
- (1) Assembly Dial to Output Conveyor Pick and Place Unit – (1) linear actuator, (1) pneumatic vertical cylinder, (2) vacuum suction grippers.

### 3.10 **Station 10 – Glue Negative Plate and Holder**

#### **Process**

1. Pallet transfers into station. Pallet is lifted and located.
2. Sleeves and plate are independently clamped.
3. Robot with (3) glue tips dispense 42 points of glue using 14 dispense cycles. One glue dispense tip is fixed and two glue dispense tips will be on linear actuators in order to adjust the distance between glue dispense location.
4. Part clamp and plate clamp retracts.
5. Note: System quoted using Loctite 3106 adhesive.



#### **Hardware**

- (1) Fanuc SR-12iA SCARA Robot w/R30iB Compact Plus Controller
- (1) Glue Dispense Controller
- (3) Glue Dispense Valves
- (2) Glue Tip Linear Actuators
- (1) 5 Gallon SS Pail
- (1) Glue Purge Station
- (2) Part & Plate Clamp Cylinders and Tooling
- (1) Air Accumulation Tank

### 3.11 **Station 11 – Cure CMA Negative Side**

#### **Process**

1. Cure tunnel entrance door is raised.
2. Pallet enters cure tunnel and entrance door is lowered, part is clamped, UV light turns on, Cure time is started.
3. After XX seconds the UV light turns off, the part is unclamped, the exit door on cure tunnel raises, pallet is released.
4. Note: System quoted using Loctite 3106 adhesive.

#### **Hardware**

- (1) LED System Controller
- (1) LED Flood UV Light
- (1) UV Light Shroud Tunnels
- (2) Pneumatic cylinder and door
- (1) Part & Plate Clamp Cylinders and Tooling

### 3.12 **Station 11.5 – Rework Load/Unload Station**

#### **Process**

1. Pallet transfers into station.
2. Availability for operator to inject rework parts or master parts into the system.
  - a. Functionality can provide for operator to remove NG parts from the system, inject rework parts into the system, or other modes.

#### **Hardware**

- (1) HMI, (1) Cycle Start Button,

### 3.13 **Station 12 – Glue Inspect**

#### **Process**

1. Pallet transfers into station. Pallet is lifted and located.
2. UV light turns on and camera inspects Negative side for correct number glue locations.
3. If inspection passes, the pallet is tagged as good and is allowed to proceed with next process.
4. If inspection fails, the pallet is tagged as bad. The pallet will stop at downstream stations but no work will be done on the CMA. The bad CMA will be picked at the unload station and placed on a reject conveyor.
5. CMA is picked and rotated, exposing the Positive side to the camera system.
6. If inspection passes, the pallet is tagged as good and is allowed to proceed with next process.
7. If inspection fails, the pallet is tagged as NG. The pallet will stop at downstream stations, but no work will be performed. The NG CMA will be picked at the unload station and placed on a reject conveyor.

### Hardware

- (1) Cognex In-Sight D905 Camera with Vidi Starter Kit 201
- (1) UV ring/area light
- (1) Pick and Place Unit with Rotation



### 3.14 Station 13 – Laser Clean #1

#### Process

1. Pallet transfers into station. Pallet is lifted and located.
2. Laser enclosure door lowers. Safety switch activated.
3. Laser unit cleans the negative side of the CMA.
4. Laser door opens.
5. Pallet transfers out of laser enclosure.
6. An air knife will be located outside the exit of the laser enclosure. As the pallet transfer to the next station the air knife will turn on and blow any debris from the CMA.

#### Hardware

- (1) Keyence Laser Unit
- (1) Laser enclosure
- (2) Pneumatic actuated doors
- (2) Safety interlocked door switches
- (1) Air Knife
- (1) Fume Extraction - Fumex Model FA1

### 3.15 Stations 14 & 15 – Fuse/Bond Bottom Side of CMA

#### Process

1. Two pallets are released from buffer stations. The first pallet transfers through Fuse/Bond machine #1 to Fuse/Bond machine #2. The second pallet transfers to Fuse/Bond machine #1. Both pallets are lifted and located.
2. Clamp cylinders and tooling clamp part.
3. Each Fuse/Bond machine cycles until finished.

#### Hardware

- (2) Fuse/Bond machines
- (4) Pneumatic actuated rotating clamp cylinders
- (4) Clamp tooling

### 3.16 **Station 16 – Part Flip**

#### **Process**

3. Pallet stops. Lift and locate positions pallet.
4. Pneumatic cylinders are used to pick CMA off of pallet, flip CMA, and place CMA Positive side up.

#### **Hardware**

(1) Pick and Place with Rotate Unit – (1) Pneumatic Horizontal Cylinder, (1) Vertical Cylinder, (1) Rotate Cylinder, (2) Gripper Cylinders, (2) Gripper Fingers, (1) Mounting Hardware

### 3.17 **Station 17 – Laser Clean #2**

Same as Station 13

### 3.18 **Stations 18 & 19 - Fuse/Bond Positive Side of CMA**

Same as Stations 14 & 15

### 3.19 **Station 20 – IR Test**

#### **Process**

1. Pallet transfers into station. Pallet is lifted and located.
2. Two test probes extend, one contacts the positive plate, and one contacts the negative plate. The CMA internal resistance is measured.
3. If measurement passes, the pallet is tagged as good and is allowed to proceed with next process.
4. If measurement fails, the pallet is tagged as bad. The pallet transfers to the next station, unload station, the failed CMA will be picked at the unload station and placed on a reject conveyor.

#### **5. Hardware**

- (1) Hioki Battery Tester
- (2) Test probe
- (2) Pneumatic cylinders

### 3.20 **Station 21 – Laser Mark**

#### **Process**

1. Pallet transfers into station. Pallet is lifted and located. Doors Close
2. Laser marks (1) sleeve with a 2D data matrix and human readable code.

3. Data will include a sequence number: CM21040104065, 21= Year, 04=Month, 01=Day of Month, 04=CMA line, 065= Unique number ID. The barcode label is compared to make sure no other label in the past 24 hours has been duplicated.
4. Data Storage – One year of barcode label information data storage is provided via hard drive on HMI.



Barcode location. Sleeve does rotate freely.

Barcode Sequence:  
CM21040104065  
21: Year  
04: Month  
01: Day of Month  
04: CMA Line  
065: Unique number ID

#### **Hardware**

- (1) Laser Enclosure
- (2) Enclosure Doors
- (2) Pneumatic cylinders
- (2) Safety Interlock Switches
- (1) Fume Extraction - Fumex Model FA2

### **3.21 Station 22 – Unload & Packout**

#### **Process**

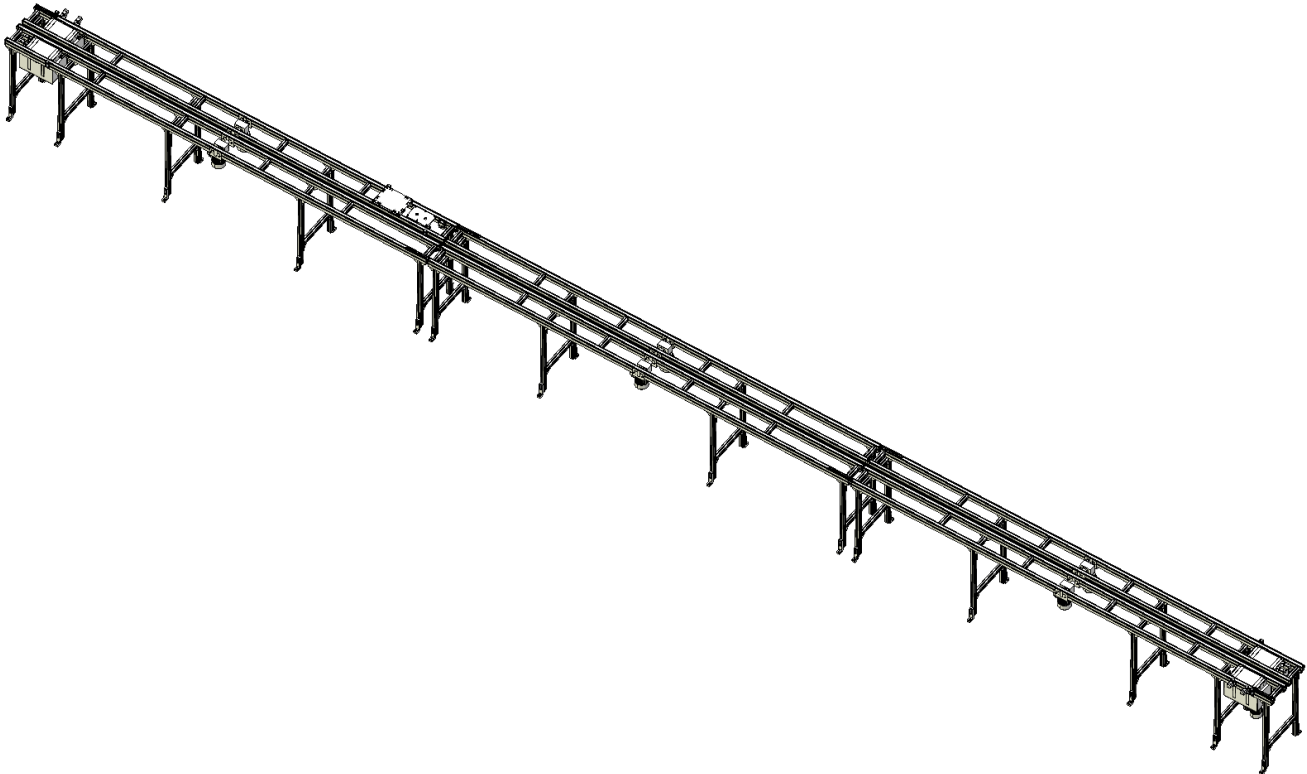
1. Pallet transfers into station. Pallet is lifted and located.
1. Packout Robot picks CMA from pallet and places in dunnage or places on reject conveyor if CMA is NG. Robot repeats process until the packout layer is full.
2. Robot picks divider and places in dunnage. Process repeats until dunnage is full.

#### **Hardware**

- (1) Reject Belt Conveyor
- (2) Part Present Sensors
- (1) Fanuc M710iC/20M Robot with IR Vision
- (2) Dunnage Stations
- (1) Layer Divider Station
- (1) Dual End of Arm Tool – pneumatic grippers to pick CMA, suction cup unit to pick layer dividers.
- (1) Guarding – free standing wire mesh guarding with (1) safety interlocked access door.

### **3.22 Pallet Conveyor Hardware**

- (6) Two Strand Conveyor – 5 meter sections
- (2) End Transfer Units
- (8) Motor with Variable Frequency Drive
- (35) Pallets, 240mm x 3200mm
- (20) Lift and Locate Units
- (35) Pallet Stops - Dampened



### 3.23 **Control System Hardware**

- (1) Allen Bradley Compact Logix Safety PLC
- (1) High Volt Electrical Disconnect Enclosure
- (1) Low Volt Electrical Enclosure
- (3) Operator Interface Units
- (3) Ignition Software
- (3) RFID Badge Reader
- (19) Remote Input / Output Modules
- (5) Safety Interlocked Access Doors

### 3.24 **Optional: Split CMA**

#### **Process**

1. Pre-Assembled SPLIT CMA Top Holders with (2) Plates and (1) Top bar will be loaded onto the existing Top Holder dial table.
2. Top holder sub assembly is picked from a dial table nest, sub assembly is inspected for correct parts, then rotated 90° and placed on CMA located in pallet.

#### **Process Changes Required**

1. Two additional programs will be added at the glue station.

2. Two additional programs will be added at the glue inspection station.
3. Two additional test probes will be added at the final test inspection station.

**Hardware Added**

- (2) Battery Test Probe
- (2) Battery Test Probe Cylinder

3.25 **Optional: Battery Wrap Process**

**Process**

1. Packout Robot picks CMA from pallet and places on battery wrap conveyor position 1.
2. CMA indexes to position 2, tape applicator #1 applies tape on left side. Two cylinders extend and push tape ends into position.
3. CMA indexes to position 3, tape applicator #2 applies tape on right side. Two cylinders extend and push tape ends into position.
4. CMA indexes to position 4. Packout Robot picks wrapped CMA and places in dunnage.
5. *Samples are necessary for a firm concept & price.*

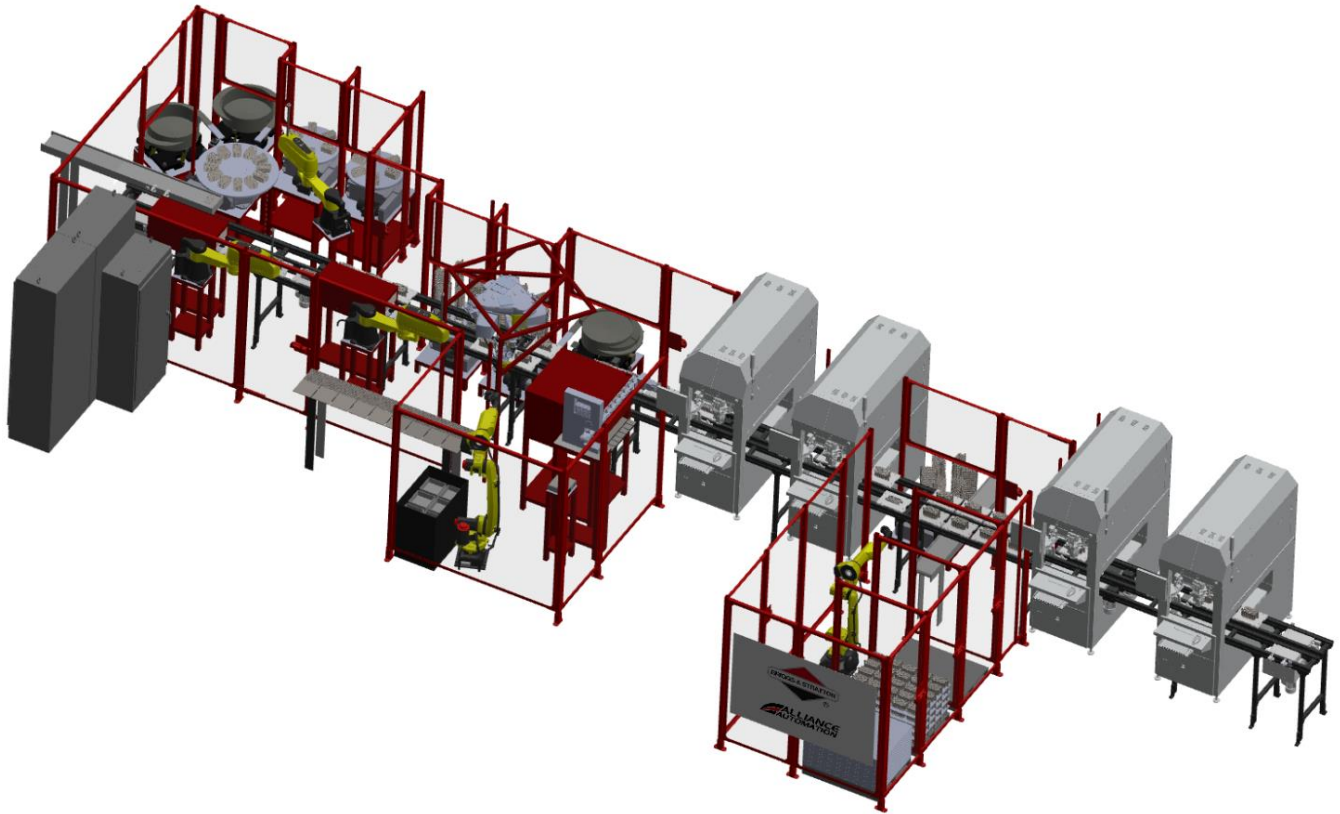
**Hardware Added**

- (1) Fixtured Indexing Conveyor
- (2) Tape Applicator
- (4) Tape Tamp Cylinders and Tooling
- (4) Part Present Sensor





## 4.2 3D Reference Model



## 5.0 PART REQUIREMENTS

- 5.1 [REDACTED] is responsible for all parts required for testing and evaluation in the design phase of the equipment to prove process capability including but not limited to initial process testing, production run testing, equipment sizing & capability testing, and other equipment capable approval process requirements, and all runoff tests.
- 5.2 Quantities required and delivery dates will be determined by Project Manager. [REDACTED]-supplied components must be properly identified and accompanied by an inventory sheet including part numbers and quantities.
- 5.3 If sample parts are not available Alliance and [REDACTED] will review, and possibly modify the timeline and project cost.
- 5.4 [REDACTED] is responsible for providing sample parts of each part number on or before the project kick-off meeting with Alliance Automation. Project timing and cost could be affected if parts are not available at the kickoff meeting.
- 5.5 Additional parts may be needed for feeding, vision, and special applications testing. The overall project timing and cost could be impacted if parts are not received per the requested dates.
- 5.6 [REDACTED] is responsible for supplying all calibration or pass/fail type parts.

## 6.0 [REDACTED] ACCEPTANCE, APPROVAL PROCESS

- 6.1 [REDACTED] Approval of machine or system built by Alliance Automation will be documented through a sign-off process. All parties are encouraged to process approvals promptly to maintain the project timeline.
- 6.2 Mechanical Design Review Sign-off occurs when the mechanical design is to a level of completion that Alliance Automation and the [REDACTED] are comfortable with scheduling approval and is based on the project timeline.
- 6.3 Electrical Design Review Sign-off occurs when the electrical design is to a level of completion that Alliance Automation and the [REDACTED] are comfortable with scheduling approval and is based on the project timeline.
- 6.4 Run-Off at Alliance Automation: The [REDACTED] and Alliance Automation agree to define requirements of [REDACTED] Acceptance during kick-off meeting for the project. At a minimum, the equipment must meet cycle time, safety, and functional requirements laid forth in this proposal. Acceptance will be documented with signatures on the runoff document.
- 6.5 Run-Off at [REDACTED] Facility will Include: Machine Installation, Start-up, and Final Machine Acceptance.
- 6.6 If the system contains any [REDACTED]-supplied equipment, the [REDACTED] must address any deficiencies with the supplied equipment on a timeline agreed to by both parties.
- 6.7 [REDACTED] is responsible for supplying all necessary parts and labor for all runoffs.
- 6.8 The system acceptance shall apply only to work provided under this quotation. In the system acceptance testing phase of this project, any downtime due to breakdowns of ancillary equipment, interfacing equipment, or, in general, any equipment not provided by Alliance Automation, and/or by damaged/defective product shall not be included in the determination of acceptance testing.

- 6.9 The [REDACTED] is responsible for reimbursing Alliance for any additional labor and or travel expenses incurred in the event the [REDACTED] does not supply the pre-determined number of parts necessary to perform any run-off requirements. This includes run-offs performed at Alliance Automation and [REDACTED] facility.
- 6.10 The [REDACTED] and Alliance Automation agree to define requirements of [REDACTED] Acceptance before receipt of P.O. At a minimum, the equipment must meet cycle time, safety, and functional requirements. Runoff at the [REDACTED] facility will occur immediately following machine installation and on-site training.
- 6.11 This sign-off signifies the contractual obligation of both parties have been satisfied, and the [REDACTED] agrees to proceed with final payment.

## 7.0 DELIVERY

- 7.1 Delivery is based upon current workload and purchased component availability at the time of order; however normal delivery will be approximately **43 weeks** from the project kick-off meeting.
- 7.2 If the equipment is requested to be shipped before achieving the agreed-upon runoff criteria at Alliance, additional cost and lead-time may be incurred.
- 7.3 Machine runoff at Alliance may be provisionally accepted by the [REDACTED] with a mutually agreed-upon open items list that Alliance will agree to accomplish before final acceptance.

## 8.0 SHIPPING, INSTALLATION & TRAINING

### 8.1 Shipping

- 8.1.1 Shipping will be F.O.B. Alliance Automation, Van Wert Ohio. [REDACTED] will be responsible for shipping arrangements.
- 8.1.2 Alliance will be responsible for rigging equipment onto the truck at Alliance Automation in Van Wert, Ohio.
- 8.1.3 [REDACTED] will be responsible for rigging equipment and placing the equipment on the floor where it is to be installed. [REDACTED] is responsible for providing all required rigging equipment needed during installation. In the event the [REDACTED] cannot provide this equipment Alliance Automation will provide the equipment at an additional cost to the [REDACTED].

### 8.2 Installation

- 8.2.1 [REDACTED] is responsible for all electrical, communication, air, and plumbing service drops required for the proposed assembly equipment.
- 8.2.2 [REDACTED] will be responsible for the electrical connection from the facility buss bar to the main panel disconnect lugs.
- 8.2.3 All other internal cell connections and termination will be made by Alliance during Alliance Set-up and Start-up.
- 8.2.4 [REDACTED] will be responsible for the pneumatic connection from the facility air supply (plant air) to the Alliance cell drip leg connection.
- 8.2.5 All other internal cell pneumatic connections are the responsibility of Alliance during Alliance Set-up and Start-up.
- 8.2.6 The installation will be performed during non-holiday 1st shift working hours, Monday - Friday. Installation hours requested outside of this time will be quoted as an additional cost.

### 8.3 Training

- 8.3.1 Alliance Automation will provide an engineer on-site for ten days to provide training and support after the cell has been run off and accepted.
- 8.3.2 Training and support will be performed during 1st shift working hours, Monday thru Friday, up to 10 hours per day. Training hours requested outside of this time will be quoted as an additional cost.
- 8.3.3 All personnel being trained must understand English. Bilingual training is not available.
- 8.3.4 Additional training or support for operators and maintenance personnel can be scheduled and performed by our technicians, if needed. Training will be billed at our normal rates and can be quoted upon request.

## 9.0 ESTIMATED PRICING

ITEM #	DESCRIPTION	QTY	UNIT PRICE	TOTAL
1	Engineering	1		
2	Manufacturing & Programming	1		
3	Materials & Purchased Components	1		
4	Installation & Training	1		
<b>TOTAL SYSTEM PRICE</b>				
PURCHASING OPTIONS				
5	Negative Plate Assembly & Auto Load	1		
6	Additions to Run Split CMA	1		
7	Battery Wrap	1		

## 10.0 CONFIRMATION OF PRICING AND DELIVERY

- 10.1.1 Due to most of our vendors only providing valid quotes for 24 hours all purchased parts pricing will be confirmed at time of purchased parts order. Any price increase will be passed to the [Redacted] as a change order. Upon request Alliance Automation will provide quote documents of the purchased parts.
- 10.1.2 Due to the unpredictable state of purchased part lead times delivery of all purchased parts will be confirmed at time of purchased parts order. The [Redacted] will be notified if an updated lead time has an impact on the overall project delivery.

## 11.0 PAYMENT TERMS

- 30% Invoiced upon Receipt of Purchase Order, Due Net 0 Days
- 30% Invoiced upon design approval, Due Net 30 Days
- 30% Invoiced after run-off (at Alliance) or shipment of equipment, whichever occurs first. If multiple shipments are required invoice will be sent upon first shipment. Due Net 30 Days
- 10% Invoiced upon completion of installation & final run-off, not longer than 30 days after delivery, Due Net 30 Days
- Payments must be in U.S. Dollars

## **12.0 DOCUMENTATION**

### 12.1 Mechanical Documentation (1 electronic copy)

- 12.1.1 Mechanical CAD drawings
- 12.1.2 Cell Layout
- 12.1.3 Assembly Prints
- 12.1.4 Detail Prints
- 12.1.5 Spare Parts List

### 12.2 Controls Documentation (1 electronic copy)

- 12.2.1 Electrical CAD drawings
- 12.2.2 Panel layouts
- 12.2.3 I/O
- 12.2.4 AC/DC power distribution
- 12.2.5 PLC program
- 12.2.6 HMI program

### 12.3 Operation Manual

## **13.0 PROJECT MANAGEMENT, UPON RECEIPT OF P.O.**

- 13.1 The project timeline will be developed with the receipt of the purchase order and down payment.
- 13.2 The project timeline will not start until part prints, part models, and part samples have been received, unless a mutual agreement is made between the Briggs & Stratton and the Alliance Project Manager.
- 13.3 A kick-off meeting will be scheduled to review the design concept, system operation, and obligations/expectations of both parties.
- 13.4 Each project at Alliance Automation is assigned a Project Team consisting of a Project Manager, Mechanical Engineer, and Controls Engineer. The Project Manager is responsible for acting as the main point of communication with the Briggs & Stratton regarding, project schedule, resources, and informing the Mechanical and Controls Engineer of any project changes.
- 13.5 The project team will meet regularly to review the schedule, review milestones, review progress, and identify issues.
- 13.6 Additional design review meetings, as determined by the team, will be scheduled with times convenient to both the Briggs & Stratton and Alliance Automation. All design review meetings must occur before the start of manufacturing.
- 13.7 Project Resources

- 13.7.1 The PM will create and maintain an “Open Issue” list. This list will be used to track and address information requests and responses, design changes, changes in project scope, and Briggs & Stratton-supplied equipment and inventory.
- 13.7.2 The Mechanical Engineer is responsible for the Mechanical design of the equipment, ensures adherence to the Briggs & Stratton’s specifications. The Mechanical Engineer is also responsible for monitoring the manufacturing of details and fielding questions from the shop as well as directing the assembly technicians during the assembly and debug of the equipment.
- 13.7.3 The Controls Engineer is responsible for the Controls design of the equipment, ensures adherence to the [REDACTED] specifications. The Controls Engineer is also responsible for monitoring panel build and fielding questions from the shop as well as directing the electricians during the assembly and debug of the equipment.

## 14.0 PROJECT COMMENTS

- 14.1 Alliance Automation will provide a system designed to operate as stated within this proposal. Unless otherwise specified the stated cycle time is calculated at an 85% efficiency rating to allow for machine downtime, rejected parts, operator breaks, operator stoppages, operator load/unload time, scheduled machine maintenance, and set-up time.
- 14.2 If [REDACTED] build specification is not available, Alliance will provide a build specification that must be agreed upon before receipt of the P.O.
- 14.3 This proposal represents Alliance Automation’s best effort to address the specified requirements and is based on available information to date. Alliance Automation reserves the right to modify or substitute concepts, methods, or components as appropriate based on discovery, new information, material availability, or engineering principles. Any changes requiring cost adjustments will only be done on a mutually agreed-upon basis.
- 14.4 Bilingual HMI programming, Manuals, signage, placards are available but not included in the original cost.
- 14.5 In the event a change of scope is requested by the [REDACTED]. The change order process will take place.
  - 14.5.1 A change order document noting requested change and associated costs will be provided to the [REDACTED]. The change order must be signed by the [REDACTED].
  - 14.5.2 If the request causes additional costs, a purchase order will be required before proceeding with the change.
  - 14.5.3 If the request reduces costs, the sell price difference will be mutually agreed upon by the Alliance project manager and the [REDACTED].
  - 14.5.4 Alliance Automation reserves the right to reference the award of any contracts in public documents such as sales brochures, marketing literature, and press releases. At no time will the value of any orders be released to the general public.
  - 14.5.5 Alliance Automation reserves the right to use photographs, drawings, and other images of their products in public documents such as sales brochures, marketing literature, and press releases. Photographs that show the [REDACTED] products being manufactured will not be used until such product is made available by the [REDACTED] to the general public.



## 15.0 [REDACTED] REQUIREMENTS

- 15.1 [REDACTED] is responsible for the plant layout and machine placement, operator instructions, and all part dunnage.
- 15.2 [REDACTED] is responsible for providing operators able to feed/load the proposed system to allow the machine to run at the required cycle time.
- 15.3 [REDACTED] must supply the specified input power and clean dry air. Other voltages shall be obtained by transformers and power supplies within the control enclosure. The control voltage will be 24 VDC. [REDACTED] facility must be capable of supplying the necessary utilities to run the equipment.
- 15.4 [REDACTED] is encouraged to provide a VPN connection to the control panel for remote access to the system. The VPN connection can provide remote support efficiently and be more cost-effective. The [REDACTED] may incur additional costs for onsite service if a VPN connection is not provided.
- 15.5 [REDACTED] is responsible for all floor preparations (concrete/building modifications where needed) and area preparations. Alliance Automation will provide all modification specifications and will add delivery of such specifications to the project timeline.

## 16.0 WARRANTY PROCESS

### 16.1 The warranty Process begins on the date of shipment.

- 16.1.1 Contact Alliance Automation Service department to initiate the warranty claim.
- 16.1.2 All warranty claims will be treated as “service” until an evaluation has been performed by an Alliance representative, and it has been mutually agreed that the incident is warranty.
- 16.1.3 If the claim is deemed to qualify as a warranty claim any purchase order submitted to Alliance will be returned; no cost to the [REDACTED] will be incurred.
- 16.1.4 [REDACTED] issues PO to Alliance Automation for a replacement part. The part will be shipped to the [REDACTED] with standard lead time.
- 16.1.5 Alliance Automation will issue an RMA for the part and begin processing procurement for replacement part.
- 16.1.6 [REDACTED] will ship part to Alliance Automation with RMA. Parts must be returned within 14 days to Alliance Automation otherwise an invoice will be sent for the part.
- 16.1.7 Alliance Automation will return part to vendor/manufacturer for warranty inspection.
- 16.1.8 If vendor/manufacturer warranties the part under conditions of their warranty, Alliance Automation will send replacement to [REDACTED].
- 16.1.9 Equipment not manufactured by the Seller shall carry the warranty of the manufacturer thereof.

### 16.2 Support

- 16.2.1 Alliance Automation service office hours are from 8:00a.m to 5:00p.m eastern, Monday through Friday.
- 16.2.2 Phone support and service requests must be coordinated through the service manager.
- 16.2.3 support@allianceautomation.com
- 16.2.4 A purchase order must be received before service can be scheduled or performed.
- 16.2.5 The service work will be limited to the issue reported on the request form.
- 16.2.6 If additional services are requested while technician is on site, an additional service request must be submitted.
- 16.2.7 The terms and acceptance of the additional services will be at the discretion of the service manager.
- 16.2.8 The service period begins after final signoff.

## 17.0 WARRANTY, TERMS, and CONDITIONS

**WARRANTY:** Alliance Automation, LLC (hereafter Seller) warrants for **two years** from date of shipment, the mechanical and electrical equipment of its own manufacture against defects in workmanship or material, its obligation being limited solely to repair or replacement of defective parts. The seller warrants for **two years** from date of shipment the engineering design of the equipment and will replace or repair any component not properly designed or applied in the intended process. The seller shall not be liable for any other damages, direct, indirect, or consequential. Equipment not manufactured by the Seller shall carry the warranty of the manufacturer thereof. Deterioration caused by misuse, abuse or improper operating procedures does not constitute a defect. This warranty, which is given expressly and in lieu of all other warranties, expressed or implied, of merchantability and fitness for particular purpose, constitutes the only warranty made by the Seller. It is further agreed that there are no understandings, agreements, or representations, express or implied, not specified herein respecting this order and this instrument contains the entire agreement between the parties.

**DELIVERY:** Except as otherwise specified in this quotation, delivery will be FOB, Alliance Automation, Van Wert, OH. Shipping dates are approximate and are based upon receipt of all information and necessary approvals.

**TERMS:** Except as otherwise specified in this quotation, the terms of payment shall be balance net within 60 days from date of invoice, depending upon standard terms or progressive terms. Amounts past due and older will be charged a finance charge of 1.5% of the outstanding balance per month.

**FORCE MAJEURE:** Seller will not be responsible or liable for any delays in delivery or manufacture due to any cause or condition beyond its control, including, without limitation, strikes or other labor difficulties, or unavailability, flood, earthquake, inability to secure transportation facilities, shortage of materials or supplies, riot or other civil disturbance, war, acts of God or nature, accident, or any acts of any government. Seller will also not be held responsible or liable for scheduled installation completion dates if at any time during the project process the seller's timeline is put on hold by the seller due to lack of information, sample run-off material delays, machine downtime, untimely review process, change in scope and/or [REDACTED] support. (Installation completion dates will move the same number of days as project is on hold or adjusted for scope change.)

**ACCEPTANCE:** This quotation shall expire 30 days after its date, unless otherwise stated herein.

**PRICES:** The prices specified herein do not include sales, use, occupation, license, excise, or other taxes in respect to manufacture, sale, or delivery, all of which shall be paid by the Purchaser, unless a proper exemption certificate is furnished.

**TITLE:** The equipment shall remain personal property, regardless of how affixed to any realty or structure. Title thereto shall remain with the Seller until the purchase price has been fully paid.

**RIGHT TO RESTRICT USE:** In order to provide additional security for both Interim and Final Payments, Alliance may install a software registration key in the equipment furnished under this proposal. In the event of payment default by the [REDACTED] Alliance may, at its discretion, limit use of the equipment using programmatic methods incorporated in such software. These methods include, without limitation, the restriction of the use of controller software contained in the equipment by the withholding of additional software registration keys necessary to continue to operate the equipment. This restriction may make the equipment incapable of operating for its intended purpose. If Alliance exercises the right to restrict use, and upon satisfaction of all [REDACTED] payment and nonpayment obligations under this proposal, Alliance will at its sole expense provide [REDACTED] with a software registration key having no expiration date.

**CANCELLATION AND TERMINATION:** Upon cancellation of all or a portion of an order placed with Alliance Automation, LLC the [REDACTED] becomes liable for payment of reasonable cancellation charges, which shall take into account, expenses already incurred, and commitments made by Alliance Automation, LLC relating to the subject order. If Alliance Automation, LLC experiences any restocking, cancellation, or associated charges from a related vendor contracted to supply material or labor for a specific [REDACTED] order, these charges shall become the full responsibility of the Briggs & Stratton. No termination by the [REDACTED] for default shall be effective unless and until Alliance Automation, LLC shall have failed to correct such alleged default within 30 days after receipt of a written notice specifying the default and required corrective measure.