

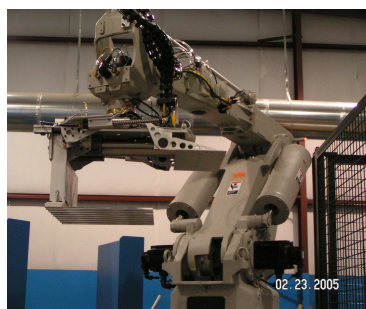
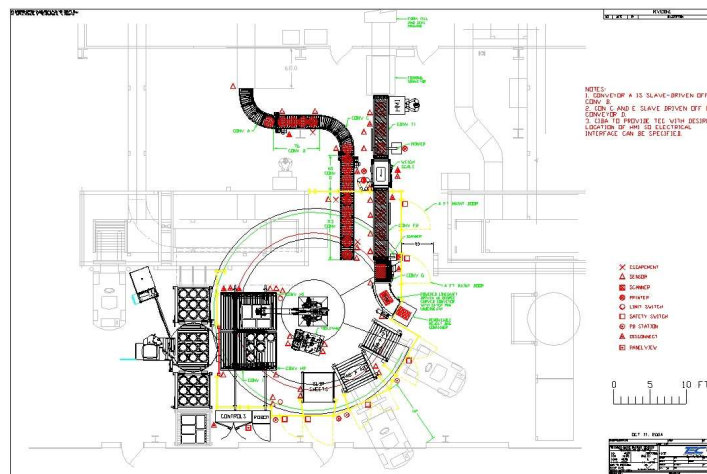
Case Study –Palletizing Bags and Drums

The customer in this case was using gantry style robots to palletize a variety of drums and bags. The older machines were experiencing increased maintenance costs and downtime. Since the process ahead of the palletizing area is continuous and may never be shut down, the accumulation of material in the palletizing area represented a big problem. As the concern over uptime grew, so did the need to find a reliable palletizing solution.

The challenges included balancing the multiple infeed conveyors with the robot cycle and tool change times to optimize overall throughput and to control the infeed accumulation, designing and building a system with the ability to handle a variety of parts and pallets with the minimal tools and tool changes, developing an operator interface terminal that seamlessly integrates with existing control equipment as well as newly acquired control equipment and a restricted amount of time allowed for the installation of the new palletizer.

System Requirements

- 99% uptime
- Part to part changeovers done seamlessly
- Drop in solution considering existing equipment and controllers
- Coordinate with multiple equipment vendors and the customer
- Handle a new style form-fill-and-seal bag not used in the previous system





Description of the Solution

TEC designed and built a system with one floor mounted 4-axis palletizing robot, two end-of-arm tools with tool changer and tool stand, pallet accumulator, slip sheet rack, two infeed conveyors, shrink wrapper, weigh scale, exit shuttle, exit conveyor with a PLC system and HMI package over the whole system.

As material leaves the filling areas, the infeed conveyor with their sensors monitor and control the flow of the drums and the bags. The bags are filled automatically and set the pace for the line. The drums require manual intervention at the fill location and are supplied to the palletizer at a less consistent rate. The accumulation areas for each product provide input to the robot and PLC system to allow the system to optimize the tool change and pallet building times. The weigh scale is used to check the weight of the bags before they enter the palletizing area. Reject bags are set aside and removed from the overall count.

The robotic end-of-arm tools include a drum tool that also handles the pallets and slip sheets and a bag-specific tool. The bags are form-fill and sealed and are squared in a squaring machine that is located shortly after the filling machine. The bags have a limited amount of handling that they will withstand before they lose their shape; therefore the bag tool has specific details to carefully pick and place the bags on the pallet. The final palletized bags provide a dense and solid pallet for transport.

Both types of product are being palletized at one time and the two-position shuttle provides the ability to feed a completed pallet to the stretch wrapper at the appropriate time. The control scheme in the cell allows the operator to not only monitor at the HMI terminal but also the set up and control the system through the PLC.

The robot is a Motoman SP100X 4-axis palletizer; also included in the cell are a Lantech stretch wrapper, Toledo weigh scale, ATI tool changer, Omni conveyor and shuttle devices, Allen-Bradley PLC and RSView based HMI package. The pallet and slip sheet racks are TEC designed and built, as are the conveyor modifications, tool stand and the end-of-arm tools.

Customer Benefits

The flexibility of the floor mounted robot versus the gantry machine, and the fact that it is a standard robot with a high mean-time-between failures, improved the overall uptime of the system.



TEC Automation, Inc.

**30 Hickory Springs Industrial Drive
Canton, GA 30115**

**Phone 770-720-3333
www.tec-automation.com**