

CASE STUDY

Pick to Pack Automated System

Component: Various plastic parts and vacuum packed fixing bolts
 Industry sector: Plastics
 Performance: 1 bag per minute

Introduction

A world's leading safety barrier manufacturer approached RNA to help them with automating the picking process of their accessory packs. RNA designed and developed a feeding and packaging system that could automatically count and pack various plastic products, stepping up from manual packing to meet the rapidly rising market demand.

The system was required to automatically sort and count a range of 14 plastic components and feed/place them into a bagging and labeling machine. Once the pack is complete it is then conveyed and dropped into a pallet box.

RNA drew upon its extensive experience to provide the customer with the best engineered and most cost effective solution.

The Challenge

In designing the system a number of challenges were highlighted:

- ⇒ 14 variants of components
- ⇒ 16 pack types containing different components
- ⇒ Future-proof; The system needed to be extendable at a later date to add further products.
- ⇒ Each feed system to be capable of being removed from the main conveyor via pluggable, quick release connections.

Solution

The variants of components and the loading speed require 13 bowl feeders & 2 hopper feeders, a central conveyor system and an automatic bagging machine. The components are loaded by operators into bulk hoppers, then discharged from the feeders and are placed into pockets on the central transfer conveyor. The components at this point are positioned ready for the entry into the bagging machine. The central transfer conveyor is designed to be adjustable to suit for all component variants.

When starting up the system, the operator selects from the HMI the pack type required and the number of packs to be made. The feeding systems then count and position the components ready for transfer to the conveyor system. The feeders are positioned so the best loading sequence for the bagger can be adopted. The bagging machine automatically sizes the bag to suit the menu of components and once filled then seals and applies the appropriate label to suit.

Siemens Simatic PLC and human machine interface (HMI) are integrated to fully control the whole system. This enables the customer to pick a specific recipe and quantity of accessory packs, via the HMI, and rely on them getting the correct number of components in each bag.

With a custom graphical interface teach system, reprogramming a new component takes just a few minutes, providing the system with future proof automation.

The system is automation-friendly, providing a complete automation solution allowing both high throughput and flexibility.

Faster than even the most experienced hand-packer, the system removes the human counting error from the packaging process and improves quality control and consistency.

Key features & benefits

The pick to pack automated system is a flexible and cost effective system which provides high level of efficiency and reliability

- Fast programming and intuitive operability through Siemens Simatic
- Designed to be extendable at a later date when more accessory packs are required; Future-proof
- Provides the flexibility to assemble 16 different pack types
- Provides cost-saving benefits such as labour cost savings, elimination of costs in injury claims, elimination of costs in lost production time
- Provides additional incremental benefits such as reduced downtime, improved quality control.

All of these benefits deliver a short payback period and impressive return on investment.

