

CASE STUDY

Plastics Industry

Component: 1 size (50 variants) of clothing size identification tags
Performance: Correct sorting at a high sort rate of 300 components

Introduction

A major retailer commissioned RNA to design and manufacture an inspection system to sort mixed batches of coat hanger size identification tags into individual containers. Each tag has a size identification character printed at three points on the outer circumference and a corresponding colour.

In designing the system a number of challenges were highlighted, multiple variants of component colour, multiple identification prints, debris and scrap contaminated batches all combined with a high sort rate of 300 components per minute.

Solution

RNA designed and developed a single lane, bowl sorting system incorporating a bowl feeder based feed system in conjunction with a camera inspection to sort the components prior to sorting them into separate containers for each size designation.

The process starts with loading components from a customer's tote into a bulk hopper capable of holding approximately 4 hours of product; the hopper is fitted with a griddle to catch over size rogue components. The bowl feeder is dosed with components from the hopper and presents a single line of orientated components to a separation wheel, the wheel transfers components onto a sorting conveyor at a repeatable spacing single file.

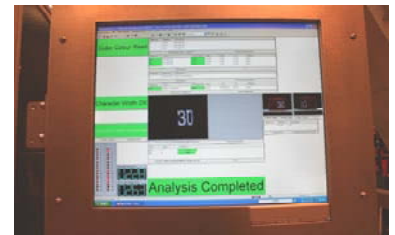
The inspection station incorporates two industrial cameras mounted on opposite sides of the sort conveyor. Each camera reads the letters and numbers printed on the components as they pass through the field of view. After the inspection process the camera control relays data to the system PLC.

Depending on the results of the inspection, the main system PLC triggers a solenoid to blow the component off the sort conveyor as it passes the correct chute. The chutes interface with 2 out-feed conveyors fitted with separation lanes; these transport the components into product specific tote bins.

For this project RNA drew upon its expertise in handling and sorting to develop a bespoke yet cost effective solution for the customer's process. Following the customer's operation and centralization plan, the solution has provided a significant saving in labour costs, reduced inventory and speeded up the lengthy process of manual inspection and sorting. The high-speed inspection system also helps to ensure tag quality supplying the process chain with a consistent supply of product.



<< Inspection station with two individual OCR cameras mounted on opposite sides of a conveyor



<< The main system PLC analyse the data



<< Components diverted into a chute relevant to each component



<< Out-feed conveyors fitted with separation lanes to transport the parts into tote bins