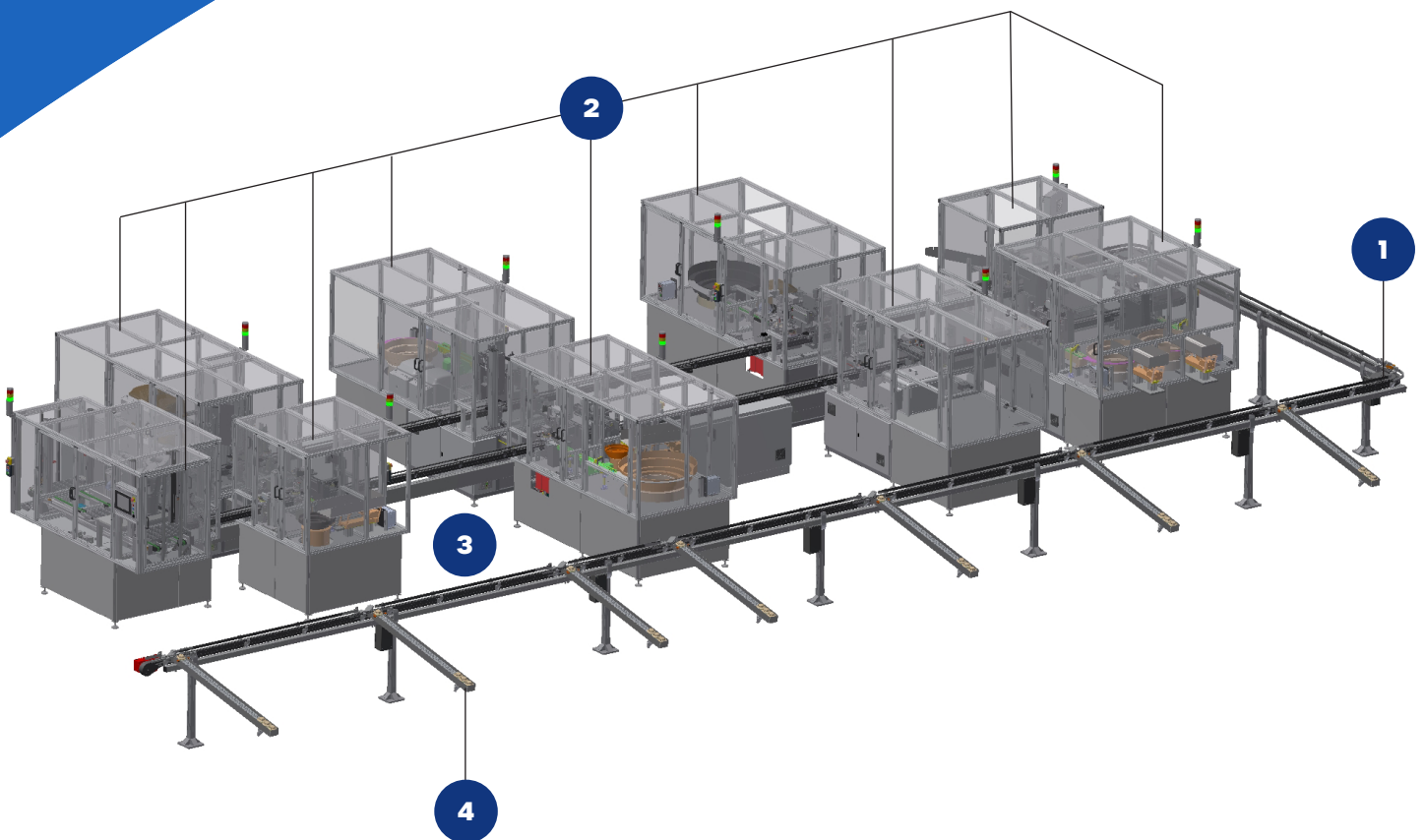


18 Part Smoke Detector Assembly



1 Racetrack transportation system, carrying assembly pucks between stations

2 Assembly and test Modules, comprising assembly, robotic vision inspection, screw driving

3 Easy access between modules to allow for maintenance and operation

4 Outfeed to final testing equipment. System gates to one of seven positions

18 Part Smoke Detector Assembly

A steep rise in the building industry and improvements in health and safety regulations are resulting in an increased demand of the production of smoke detectors. SP Automation & Robotics worked with a smoke detector manufacturer to provide a bespoke, high quality and multi-part assembly solution.

Our client had previously looked at automating a 25 year old, 18 part smoke detector system in the past and were told it was not achievable. This system was to allow them to become more competitive in their market.

The Challenge

The main objective was due to the age of the device, there were no features on the components that could be changed to aid automation. The system would have to allow the device to be manufactured and assembled in a more controlled manner than the current process, and allow them to introduce stricter process control.

- Fully automating the assembly and testing of the device
- No design changes of the device to aid the automation
- Produce a fully assembled device every 4.5 seconds
- Ensure 100% inspection of the device throughout the process
- Modular construction to allow for future proofing
- Cater for various device configurations therefore including product recipes

The Solution

The assembly system was designed around a race track type conveyor. The conveyor system ran in a continuous loop feeding pallets from station to station indexing the pallets every 4.5 seconds to give the required throughput. The pallets had tooled plates mounted to the top face to allow accurate location of the component parts, making up the machine 'nests'.

On the system there are a number of stations carrying out checks which ensure that the assembled parts are present and that the correct part is installed for the relevant assembly. The pins and the headless screws are checked to ensure they are present, the PCB is also checked to ensure it is the correct variant.

Assemblies that failed an inspection at any stage the assembly stations up stream from the failure point onwards inhibited to reduce wastage of components. Once the failed assembly reaches the reject station all parts in the nest will be unloaded in to a reject collection box.

Completed and verified assemblies are picked and placed on to an offload conveyor which transports the assemblies to the test equipment.

Features & Benefits

- Eighteen Part assembly system
- Seven interlinked modular production line
- Full Automation for the assembly and testing of the device
- Automatic bowl and tray feeding of all components
- Configurable to suit different product variation
- Full Traceability of each device throughout process
- Full inspection of device throughout the process



For more information or to discuss your bespoke solution get in touch.

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