

INSERT MOLD SYSTEM

Automation Solution for the Plastics & Composites Industry

This insert molding system, designed and built by TCA for a plastics manufacturer, is used to overmold electrical terminals for an automotive application. Able to produce finished parts within very tight tolerances, the system consists of three zones: a terminal handling dial, a mold tending robot, and a finished part handling dial.



The system is also set up to allow quick changeover to accommodate both left- and right-handed parts. As the electrical terminals are singulated and loaded, a 6-axis robot picks them up, places them into the mold, removes them when overmolding is complete, and loads the parts to an 8-position electromechanical rotary indexer. Hi-pot and continuity testing ensure their electrical integrity, and the terminals are passed through a trim press and fed to a discharge conveyor.



An aluminum extrusion frame with PVC and clear panels for visibility ensure complete operator safety. The cycle time for this system is 4 parts every 24 seconds, providing the customer with the high-throughput solution they were looking for.

TCA was able to design, manufacture, and deliver this complex, highly efficient system to the customer in only 20 weeks.



HIGHLIGHTS



PROJECT DESCRIPTION

We manufactured this insert molding system for use within the plastics industry for an automotive component

CAPABILITIES APPLIED / PROCESSES

Mechanical Design

- Design Insert Mold System
- Created 3-D Models
- 3D Simulation

Manufactured in-house using our CAD/CAM equipment and capabilities.

PLC Programming

HMI Design & Programming

Documentation

- Hard Copy and CD-ROM Copy of Machine Manuals
- Operating Procedures
- Assembly Drawings
- Electrical Schematics

Mechanical & Electrical Installation

Commissioning

Warranty

- 2 Year Warranty up to 6,000 Hours Running Time

INSERT MOLD SYSTEM FEATURES

Manually Loaded Electrical Terminals

- Punches out the Connecting Tie Bars to Singulate Parts

6-Axis Robot

- Picks Terminals for Placement in Mold
- Picks Overmolded Parts From Mold
- Loads parts to Floor Mounted Automation for Electrical Integrity testing
- End Effectors Designed for Manual Change-over

Separate Molds for Left Hand and Right Hand Parts

System Consists of 3 Zones

- Terminal Handling Dial
- Mold Tending Robot
- Finished Part Handling Dial

Guarding

- Constructed of Aluminum Extrusion Frame w/ PVC Panels and Clear Panels for Visibility

CYCLE TIME

4 Parts Every 24 Seconds

OVERALL SYSTEM DIMENSIONS

15 ft X 20 ft

OVERALL LEAD TIME

20 weeks

FINISHED PART HANDLING DIAL COMPONENTS

8 Position Electromechanical Rotary Indexer

Hardened Tool Steel Quick Change Nests for LH and RH Parts

Hi-Pot Test Tooling

Continuity Test Tooling

Trim Press

Unload Pick & Place Mechanism

Reject Part Diverter & Reject part Bin

Good Part Discharge Conveyor

ABOUT TCA TECHNOLOGIES

TCA Technologies is a leader in the design and manufacturing of custom industrial automation equipment. Building on 20 years of industry experience, TCA employs the most innovative technological solutions to conceptualize, develop, and execute cutting-edge automated manufacturing systems. A team of experienced engineers have developed manufacturing solutions for a variety of fields such as R&D prototyping, welding, assembly, leak testing, material handling, plastics and composites, vision and accuracy. Catering to some of the world's most successful manufacturers, TCA strives for excellence by developing sophisticated new or improved systems for industries such as automotive, energy, health sciences, electronics, and consumer products.