

Voltage Adapter Assembly System

Background

Advent Design's client was manually assembling electric outlet adapters and was losing market share each year to low-cost, offshore products. Advent Design proposed developing an automated assembly system to reduce labor and improve quality.



System Description

Advent Design developed a totally automated system to automatically assemble four different electrical outlet adapter products. As part of this project Advent developed a custom synchronous pallet conveyor transport mechanism so that the layout of the system supported easy access to the stations and feeders.

The system had stations to perform the following operations:

1. Feed pins of two different diameters
2. Feed Blades in two different configurations
3. Check for pin/blade presence
4. Feed plastic base
5. Feed and stake two brass clips
6. Perform an electrical test
7. Feed and place plastic cover
8. Ultrasonically weld components together
9. Hot stamp customer logo on top and side
10. Eject/reject

The system was designed to run at a rate of 12 products per minute, but achieved a rate of over 15 parts per minute. Changeover time between products, which involved removing and replacing all 25 pallets, took less than 10 minutes.

Impact

This system enabled the client to increase production capacity and improve quality while reducing the amount of manual labor from sixteen operators to one. The system, which was installed in 1993 and is still in operation, has produced over 16 million pieces. This system has enabled our client to regain lost market share, and now commands a dominant market share position for this product.



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