

Pin Feeding Carrier Assembly System

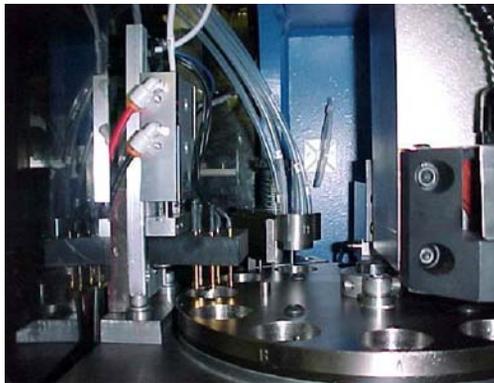
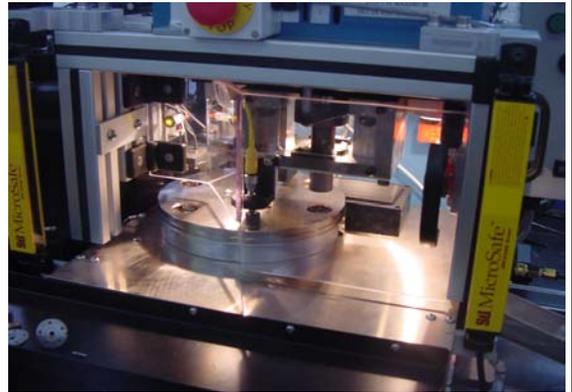
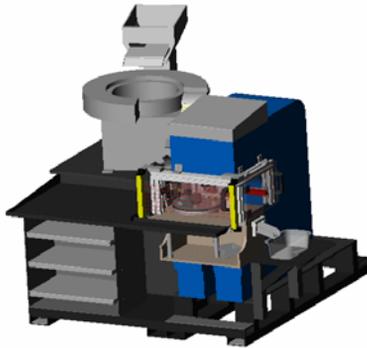
Background

Advent Design's client manufactures a variety of cordless handheld power tools. The transmission of their cordless drill required pressing 15 metal pins into three carriers.

The operation was performed on 8 hydraulic presses and all components were manually fed into the tooling. The operation required a significant amount of labor and our customer requested an automated assembly system to automatically feed the pins and carriers and press them together. Advent Design evaluated the operation and determined that most of the labor was spent feeding pins and relatively little labor was expended feeding the carriers. The cost to develop a pin feeding system was significantly less and involved significantly less technical risk than developing a system that included automatic carrier feeding. Advent Design recommended building three pin-feeding systems each dedicated to a different style carrier.

This less is more approach had four major advantages

- 1) Significantly lower capital investment
- 2) Less technical risk and simpler system
- 3) Used less floor space
- 4) Enabled the client to produce all sub-components required for the next assembly operation simultaneously, eliminating WIP and supporting their Lean Manufacturing initiatives.



System Description

Advent designed, built and installed three machines based on a rotary table transport system as part of the initial delivery. This concept has now been reused for 5 and 6 pin assemblies.

In summary each system performed the following operations:

1. Automatically feed pins into the dial table
2. Check for pin presence
3. An operator manually feeds a carrier into the system
4. Press carrier onto pins
5. Eject

Impact

Advent built and installed three automated pin-feeding systems, each dedicated to one of three different style carriers. The result was labor saving automation that supported the client's lean manufacturing initiatives as the automation could be integrated directly into the manufacturing cell. The client spent less than 1/3rd of the cost of a totally automated system and achieved 87% of the potential labor reduction, reducing the payback period to only 5 months. When the client introduced the next generation cordless product they contracted to have an additional set of three machines built for the new product.

