



The Project:

Electrical LCP .4mm Connector Application

Due to increasing consumer demand, we were tasked with expanding cavitation, miniaturizing existing tooling and providing a state of the art high speed automation / inspection cell with emphasis on reduced component pricing and lead-times. Reducing the tool size would allow Matrix Tool to transfer production into our Small Part Molding (SPM) room. Matrix Tool would then be able to take advantage of Sodick's unmatched exact dosing capabilities, which we viewed as a key ingredient to this project's success.

The Overview:

Our customer asked for two existing larger injection molds to be expanded from one cavity to two cavities for the purpose of increasing capacity and reducing production costs, component pricing, and lead-times. In order to achieve this, Matrix Tool partnered with Yushin America, Plustech/Sodick and a Japanese vision provider to design a high-speed automation cell complete with automated part extraction, visual inspection and inline product sorting capabilities.

The Challenge:

Due to a significant increase in demand, our customer required an increase in production capacity of two mating electrical connectors with tight tolerance 0.4mm circuits. As noted, the cavitation on two existing injection molds was not only expanded from one to two cavities, but the tools were also miniaturized in order to take advantage of the 20 ton Sodick Molding Machine's fast response times and exact dosing capabilities. Increasing cavitation on such a tight tolerance, inspection intensive product line presented many obstacles that pushed traditional boundaries of the manufacturing and quality processes. Our staff viewed this challenging project as an opportunity to differentiate Matrix Tool's service offerings, which would ultimately provide the following advantages to our customer: increased production output, reduced labor requirements, increased part quality, increased process repeatability and reduced component pricing.



Fig 1: High Speed 2 Axis Side Entry Robot with Part Inspection Capabilities

The Solution:

Matrix Tool rose to the challenge by working with Yushin, Plustech, and the Japanese vision provider to develop a state of the art high speed side entry automation cell. Specifically, Sodick's 20 ton Injection Molding Machine, Yushin America's High Speed Side-Entry Robot, and the high resolution camera/software work in tandem to mold and remove each cavity from the mold with built-in mold protection features, inspect each part for defects, and finally sort, separate and distribute the connectors by cavity ID. All of this occurs in a matter of seconds and is a testament of the creative engineering our dedicated staff applied to this project.

The Benefits:

Matrix Tool was able to use state of the art automation technology to improve part quality and provide increased production capacity on this multi-cavity, tight tolerance electrical connector. In addition, cycle time and processing costs were driven down to levels that are not typically achievable on traditional horizontal injection molding machines. This allowed our customer to meet increasing product market demand while simultaneously reducing the overall manufacturing cost of their connector assemblies. Matrix Tool's use of state of the art Sodick injection molding machinery, coupled with creative automation and engineering know-how, allowed us to expand our manufacturing capabilities to solve our customer's micro molding electrical connector challenge.

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For a quotation or additional information, contact Matrix Tool Inc: