



## The Project:

### Automotive, Electrical System Application

Design and construction of four (4) single cavity insert molds with a riveting action incorporated into the product during the molding process.

## The Overview:

Our customer contracted Matrix Tool to assist with the research, development and construction of production tooling to develop components for the Chevy Volt, an extended-range electric car being developed by General Motors. The project involved working closely with our customer to incorporate inventive techniques to produce a series of interconnect boards that assist in the control of the battery cells and improve the existing production process of first generation parts by eliminating secondary operations.

## The Challenge:

The existing production process being utilized by the end customer included pre-molding operations to rivet metal inserts and post-molding operations to apply silicone to fill holes created by the molding process. These pre and post operations made the overall manufacturing process both cost and time prohibitive. In order to develop a cleaner looking product and more efficient manufacturing process, our customer turned to Matrix Tool to help them design and build production tooling that would eliminate the need for these secondary operations without compromising the function and reliability of the molded product. In addition, since time-to-market was of the essence, Matrix Tool was challenged with the task of creating

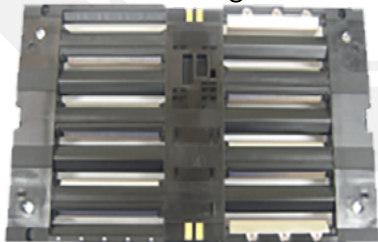


Fig 1: Finished Component Post-Molding

production tooling and maintaining an extremely aggressive delivery schedule while working in a “research and development” mode.

## The Solution:

Matrix Tool’s Engineering and Tooling staff worked tirelessly with our customer’s Product and Tool Engineers to develop rotary style molds for each component and invent unique systems contained within each of the tools to address our customer’s challenges. The rotary molds designed and built by Matrix Tool allowed for the insertion of 19 different copper inserts that had to be critically positioned prior to molding and retained in position during the molding process.



Fig 2: Finished Component Post-Molding

In addition, the molds incorporated a clinching / riveting system, utilizing pneumatics as the driving force, that activated upon closing of the mold. All design, tooling and preproduction molding trials were completed at the Matrix Tool facility in order to expedite debug of the tooling, including the unique positioning and riveting systems integrated into the molds.

## The Benefits:

Matrix Tool’s technical expertise and full-service manufacturing capabilities helped our customer to:

- Develop specialized production tooling incorporating inventive techniques capable of reducing 3 separate operations into 1 streamlined molding process;
- Produce consistent and reliable parts at a reduced cost to the end customer; and
- Manufacture pre-production components for submission to their customer within the aggressive ten week timeframe established for the program.

Ultimately, our efforts allowed our customer to secure this product line and position themselves for future long term growth.

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