



## Research & Design Services

The Genesis R&D team takes clients from concept to commercialization.

At Genesis Plastics Welding, we consider ourselves champions of our customers' success. Our research & design (R&D) team partners with customers providing expert guidance, innovative ideas and access to the best technological resources. Success is achieved through strong project management, individualized attention, customer collaboration and a commitment to achieving key objectives including on-budget and on-time delivery.

Our goal is to help clients validate and bring their products to market quickly in the most efficient and cost-effective manner possible. Years of experience in bonding a vast variety of thermoplastic materials plus expertise in prototype design, engineering and product development equate to the Genesis R&D team being well-versed in taking clients from concept through prototype development to first article production.

### The initial phase of the R&D process includes:

#### Consulting and Project Management

We want to be a partner in the development of your product, therefore our team takes the time to listen and ask questions. A non-disclosure agreement is signed by both parties to mutually protect intellectual property.

#### Product Design Consultation

Before we engage, we will validate that we are clear on your business needs, manufacturing requirements and overall expectations.

#### Materials Specification

We work together to evaluate heat sealing solutions using the most appropriate materials. Genesis has strong relationships with many of the industry's leading resin and film suppliers and our materials engineer is abreast of the latest advances in material options.

#### Early Phase Drawings

If you don't have technical drawings, we will work with you to create CAD drawings that can be electronically transmitted for review and approval.

#### Define Testing and Process Requirements

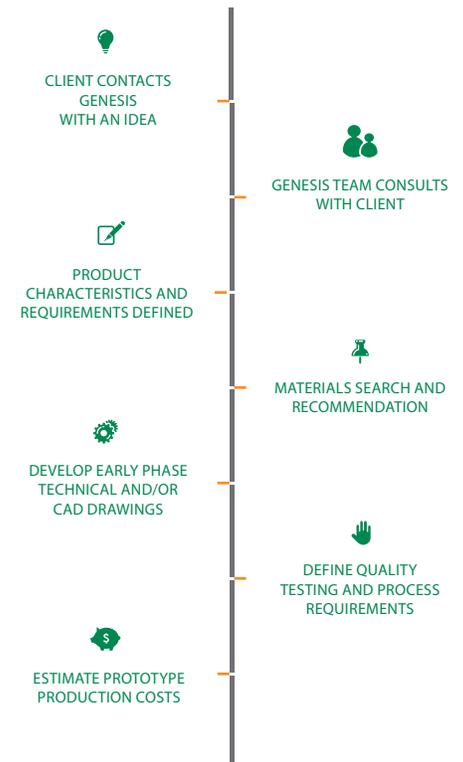
Before the prototyping stage, our team will define quality testing and process requirements to ensure the integrity of the initial prototype and final product. This process is repeated until the item's defined specifications are optimized for production.

### ABOUT GENESIS PLASTICS WELDING

Genesis Plastics Welding is a contract manufacturer specializing in the radio frequency (RF) heat sealing of polar and non-polar products.

### R&D SERVICES INCLUDE:

- ▶ Consulting Services
- ▶ Product Design and Characteristics
- ▶ Process and Product Validation
- ▶ CAD and Technical Drawings
- ▶ Materials Selection and Evaluation
- ▶ Soft Tooling Prototype Development
- ▶ Functional Prototyping
- ▶ Product and Process Improvement



## The Prototype Development Process

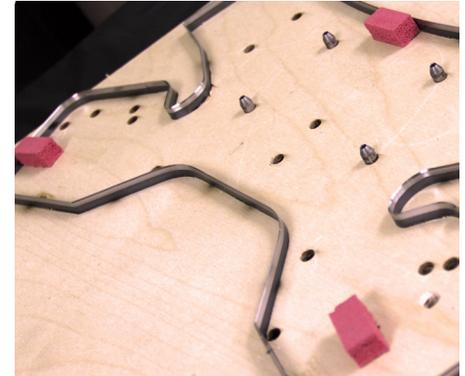
At Genesis Plastics Welding, our expertise ranges from creating basic functional prototypes to more complex projects requiring a high level of creativity and innovation. Products in unusual shapes and sizes or the addition of components such as valves, ports and tubing are normal challenges overcome on a regular basis. Our many heat sealing options offer solutions from tiny spot welds to large-format welding patterns in dimensions up to 82" x 42".

### Soft Tooling Prototype Development

Once the product design characteristics are approved by the customer, we test and validate the design by creating an initial prototype. This often can be provided quickly through inexpensive soft tooling. We have access to an extensive database of raw materials and a wide range of polymers in-house for quick and efficient prototype development and product testing prior to investing in more costly production tools.

### Functional Production Prototype Development

Once the initial prototype is inspected, validated and approved by the client, production tooling is ordered. Our team will characterize our process and validate the production tool. Then, a first article will be created for final approval before the client's design goes into mass production. These functional models can be received by the client in a timely manner after design approval – a highly accelerated turnaround time compared to the industry standard.



## Quality in the Research and Development Process



Throughout the development process, we consistently test the integrity of the product and the strength of the welds. We track the data to ensure the production process is repeatable and efficient for commercial production. The manufacturing processes our employees follow at Genesis are compliant with ISO 13485:2003 and based on ANSI and ASTM quality standards.

