



CLEARWELD®



ADAPTING LASER WELDING TO YOUR IDEAS

## Engineering Services

The Clearweld Team offers a variety of services to assist customers in the investigation or implementation of laser welding. Our goal is to make the process easy to understand and provide customers the information necessary to make critical decisions. These services are intended to encourage a *design for manufacturing* approach. We welcome a high level of communication and participation throughout the developmental process.

Gentex provides part evaluation and initial trials free of charge to demonstrate proof of concept. Additional fee-based engineering services are also provided to assist customers in successful implementation of their plastic laser welding application.

### Resin development

- Evaluation of resin/additive chemical compatibility and survival in process
- Compounding of developmental quantities of resin
- Injection molding of samples
- Spectral analysis of resin absorption characteristics
- Laser welding trials
- Part/joint design recommendations

### Coating and dispensing

- Evaluation of part for use with Clearweld coating
- Selection of optimal coating to achieve application requirements
- Part/joint design recommendations
- Evaluation of required coating density for a specific part
- Evaluation of coating consistency via IR imaging

- Selection of optimal dispensing method
- Trials using various coating and dispensing techniques (including microsolenoid, spray, needle-tip dispensing and ultrasonic spray)
- Repeatability experiments
- DOEs

### Welding Trials

- Process optimization
- DOEs
- Extended feasibility studies
- Repeatability trials

*The services listed above are provided at an hourly or daily rate.*

## Other Services

The following additional services are quoted on a per case basis:

- Custom color matching of weldable resins
- Custom film extrusion
- Extended repeatability trials
- Pilot production
- Contract manufacturing
- QA/QC services including: tensile testing, environmental tests, accelerated aging and IR imaging
- Fixturing
- Part/joint design

Please contact Gentex to discuss your requirements and obtain a quotation.

A technology solution by  
**GENTEX®**

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## Equipment Resources

The Clearweld laboratories include a variety of resources which assist in laser welding application development. All of these are available for customer use.

*Resources include:*

### Lasers\*

- 150W diode, 940nm, lens focused, contour
- 300W diode, 940nm, quasi-simultaneous
- 50W diode, 940nm, quasi-simultaneous
- 80W diode, 980nm, fiber-delivered, contour
- 200W diode, 960nm, simultaneous
- Access to additional lasers

### Coating Application Methods\*

- EFD 740V-ss needle tip valve with Valvemate 7000 controller
- EFD 780s spray valve with Valvemate 7040 controller
- EFD Ultra TT Series Dispensing System
- PDI NanoDispense System – microsolenoid dispensing system
- BioDot LD2500 Biojet Dispenser – microsolenoid dispensing system
- Sono-Tek Aquamist – ultrasonic dispensing system

### Automation\*

- Techno-IseI CNC Router, 59in x 50in work area (1500mm x 1270mm), 3-axis plus rotary axis
- EFD JR2200 Work Bench Robot, 7.9in x 7.9in work area (200mm x 200mm)
- EFD JR2400 Work Bench Robot, 15.75in x 15.75in work area (400mm x 400mm)
- EFD Ultra TT Series Dispensing System, 12.8in x 12.8in work area (325mm x 325mm)

### Plastic Processing

- Lab scale molding and extrusion

### Analytical and Testing Equipment

- IR imaging system with image analysis software
- UV/VIS/IR Spectrophotometer
- FTIR
- TGA
- DSC
- Instron Universal Tensile Tester
- Atlas Weatherometer
- Temperature and humidity chambers
- Nikon stereoscopic zoom microscope with polarizer
- DOE DesignExpert® Software
- Heated Carver™ Press
- Brabender™ Torque Rheometer
- Access to additional equipment

\*Contact GENTEX if interested in utilizing equipment at your facility.

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