A combined force in

Custom Thermoforming
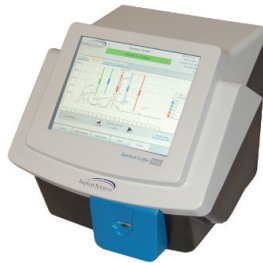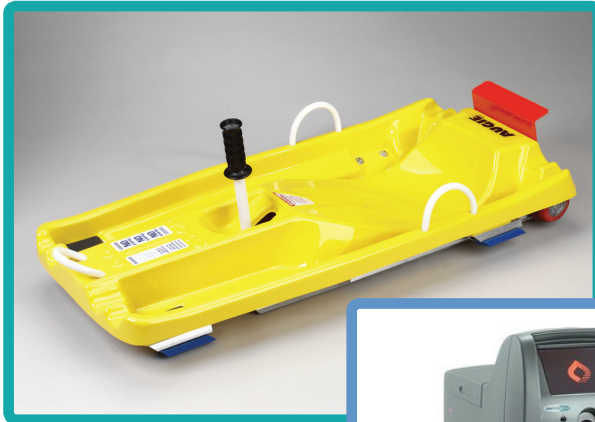
SPECIALIZING IN LARGE PARTS & LOW VOLUMES **ISO 9001:2008 REGISTERED**

THERMOFORMING PRESSURE FORMING FABRICATION DESIGN FINISHING

**MEDICAL HOUSINGS RADOMES ELECTRONICS ENCLOSURES
OUTDOOR EQUIPMENT PART PROTECTION**

Key Terminology:

Thermoforming – A general term for the process where a plastic sheet or roll is transformed into a 3-dimensional shape using heat, vacuum & pressure.

Vacuum Forming – This process forms the part by pulling a hot sheet of plastic against a mold using vacuum. The mold is commonly an open mold & forming force is limited to atmospheric pressure of approx. 15 psi.

Pressure Forming – This process adds a pressure box to the tooling package. Utilizing both vacuum & positive air pressure, the process generates 3 to 4 times the forming pressure of vacuum alone. We can form fine details that create a mold side appearance similar to that of an injection molded part, including surface textures, at a fraction of the tooling price.

Twin Sheet Forming – In this process there is a top & a bottom mold. Two sheets of plastic are heated in sequence & formed at the same time with a fused joint occurring around the perimeter of the molds while air pressure is injected between the upper & lower sheets. This process allows for forming hollow parts with a distinct upper & lower shape.

Tolerance Guidelines:

These are general guidelines for tolerances on thermoformed parts, when formed on aluminum tools. Some materials such as HDPE & PP require wider tolerances due to the material properties. Tighter tolerances are available with more precise machining centers with proper fixturing.

Formed Features – +/- .030" up to 12" , add .002" per inch after 12"
Trim to Trim Features – +/- .015" up to 12", add .001" per inch after 12"

Thermoforming Equipment:

Forming Department – Pressure Formers, Vacuum Formers & 3 and 4 station Rotary Thermoformers. Our maximum size is 72"x 108"with a 38" deep draw.

Secondary Operations – CNC robotic routers with a maximum bed size of 60" x 120".

Tooling – In house tooling department with CNC machining centers and support equipment.

Other – In house finish painting & RF/EMI Shielding. QC inspections with CMM Color conformance with a Datacolor 600.

Common Materials:

ABS: (Acrylonitrile Butadiene Styrene) Very common material, good stiffness & impact strength. Available in almost any color, several textures & UL94-V0 grades (Flame Retardant).

ACRYLIC: (PMMA – Polymethyl Methacrylate, Plexiglass) Water clear & abrasion resistant material, easily fabricated, available in impact modified grades & many colors.

HDPE: (High Density Polyethylene) Excellent impact & chemical resistance, good cold temperature properties, dimensionally not as stable as other materials.

HIPS: (High Impact Polystyrene) Low cost, forms easily, available in many colors; more brittle than ABS.

KYDEX: (PMMA / PVC blend) Good general purpose material offering excellent impact & chemical resistance in a highly cosmetic sheet. Available in almost any color, several textures & UL94-V0 grades.

PC: (Polycarbonate) Very high impact strength, clear & high temperature resistance.

PEI: (Polyetherimide, Ultem) Very high temperature grade material, autoclaveable, natural amber color.

PETG: (Polyethylene Terephthalate Glycol) Clear, with excellent impact strength & forms well.

PP: (Polypropylene) Excellent chemical resistance, rigid with very good impact strength, good at higher temperatures but dimensionally not as stable as other materials, similar to HDPE.

PVC: (Polyvinyl Chloride) Rigid material, very good impact strength, flame Retardant, limited availability.

TPO: (Thermoplastic PolyOlefin) Outstanding impact properties, available with a high gloss finish, good for outdoors applications, more difficult to form, especially deep draw shapes.

Design Service is Available:

Our engineers will be happy to work with you to design a custom thermoformed part for your specific application.