Differential Pressure Molding (DPM)

A New, Patented Process from
Vantage Technologies
4645 Bree Road
China Township, MI  48054
248.709.2090
Background

• Developed and patented in the late ’90s
• Low cost production of auto interiors
• Invented for use at new locations in emerging markets
• Based on compression molding
• Started Vantage Tech in 2000
• Produced more than 75 molds with parts.
• 36 Production parts.
• Licensed 7 companies to produce parts.
• One company with exclusive rights in the automotive interior market.
DPM Process

- Low-pressure compression molding process
- Force is applied over the total tooling surface
- Thermoplastic & thermoset substrate materials
- In-mold bonding of cover materials
- Reduced energy consumption
- Ideal for smaller volumes
- Excellent process for emerging markets and remote site manufacturing
DPM Process

**STEP 1**
Heat Material or Heat Mold

**STEP 2**
Load Material into Mold

**STEP 3**
Close Mold and Apply Differential Pressure

**STEP 4**
Remove Part
Molding Equipment

- The press is a simple clamp or lifting device
- Standard wall plug, 110 volt 20 amp
- No special site preparation
- Vacuum, air, or water pressure is used to generate the force needed to form the parts
Tooling Innovations

- Molds are thin shells made of proprietary composite materials
- Thin shells transfer heat quickly and eliminate the need for cast-in water lines
- Tool reinforcements are eliminated because molding force is applied over the entire surface
- No forklift to change molds – they typically weigh less than 50 pounds/23 kilograms
- No special storage – tools can be kept on their side in the work cell area
Dual-Pivot DPM Molding Cell
Typical DPM Process Savings

- 50 to 75% Mold Cost Reduction
- 1/2 the Tooling Time
- 2 to 4 times the Output per Square Foot
- No hydraulic press
- Simple & Rapid Tool Changes
- 5 to 10% Material Reduction
Future Work Cell with Automatic Trimming
Potential & Commercial DPM Applications

- **Automotive**
  - Molded Interior Trim
  - HVAC Components and Ducts
  - Structural and Semi-structural Panels
  - Flooring
  - Storage Systems

- **Industrial and Commercial**
  - Packaging Systems
  - Architectural Products
  - Ceiling Tiles
  - Wall Systems
  - Wind Turbines

- **Consumer Products**
  - Organizational and Storage Products
  - Appliance Panels and Parts
  - Automotive Aftermarket Products
  - ATV/ Golf Cart/ Personal Transportation
  - Luggage and Cases
  - Lighting Fixtures
  - Contract and Residential Furniture Products
Summary of Advantages

- Compression molding at vacuum forming costs
- Processes both thermoplastic and thermoset
- Low cost, rapid tool fabrication
- Reduces equipment investment
- Reduces facility and energy requirements
- “New” process with 10 years of experience