Molding the Future with Natural Fiber Composites
Manufacturing

Plant Size:

Existing 9200 m$^2$
(95,000 ft$^2$)
On-site Laboratory & Prototyping

Available for Customer Use
Quality

Registered:

- ISO/TS 16949:2002
Flexform®
Natural Fiber Composites

- Kenaf
- Hemp
- Jute
  - Tossa
  - Mesta
- Polypropylene
  - Alternate polymers
    - Polyester
    - Nylon
Product Line Up

- **FlexForm® MT**
  - Weights: 170 to 2400 grams/m²
  - Widths: Up to 3.2m (10.5 feet)

- **FlexForm® LD**
  - Weights: 300 to 5000 grams/m²
  - Widths: Up to 1.5m (5 feet)

- **FlexForm® HD**
Product Benefits

- **Lamination**
  - In-mold bonding of cover materials and secondary attachments *without* adhesives
  - **NO** De-lamination, sag, or wrinkling

- **Match Metal Molding**
  - Consistency
  - Quality

- **Flame Retardant**
  - FMVSS 302
Product Benefits

• **Acoustical**
  – Variable

• **Fastener Retention**
  – High Load Capability
    • screws, staples, rosettes, etc.

• **Dimensionally Stable**
  – Not Affected by Heat or Humidity
**Product Benefits**

- **Significantly Less Weight**
  - Improved fuel economy
  - Simplified handling

- **Recyclable**
  - Reuse of trim waste
  - $$ Savings $$
  - End-of-Life Recovery

- **Environmentally Friendly**
  - **NO** Harmful Chemicals
  - **NO** VOC Off-Gassing
  - Sustainable Resource
Finished Component Costs

• **Savings over existing technologies**
  – Reduced capital investment
    • Processing equipment
    • Tooling
  – Reduced burden
    • Elimination of secondary operations
    • Elimination of costly adhesives
    • Lower cycle times
Focus Market

- Automotive, heavy truck, and commercial interior trim
  - Door panels
  - Load floors
  - Pillars
  - Quarter panels
  - Rear package trays
  - Trunk liners
  - Overhead systems
    (under development)
Focus Market

New

FlexForm FR

• Office interiors
  – Partition panels
  – Ceiling tiles

Meets ASTM E84 Class A Requirements for Flame Spread and Smoke Generation
Market Objective

• To provide a natural fiber based alternative to the commonly used glass mat in office interior panel applications that has a ‘Class A’ fire rating and that is also a drop in replacement on existing systems.
Surface Burning Characteristics

- Specification
  - ASTM E84

- Class A Rating
  - Flame Spread Index = less than 20
  - Smoke Developed Index = 20
Product Benefits

• Tack-able
  • Superior wear characteristics

• Structural Strength
  • Potential to reduce steel content
  • No need for backside reinforcements
  • Reduced damage and associated warranty costs

• Fastener Retention
  • Staples, tacks, screws
  • Mounting fasteners, Direct Paper flow add-ons

• Near White or Natural color options

• Environmentally Friendly
  • Sustainable resource
  • No harmful off-gassing
Expanded Markets

- Commercial Farm Equipment
- Absorbency Pads
- Non-Commercial Aircraft Interiors
- Erosion Control
- Cargo Boxes/Highway Trailers
- Carpet Cushion
Future Value Added Processes

- Dry resinating for thermal set processing
  - High tensile modulus
  - High flexural modulus
- Pattern cut panels
  - Cutouts recycled
    - Customer reduced trim waste costs
  - Reduced finish materials