Connex™ 500 3D Printer

• World’s First Multi-Material 3D Printer

• Any 2 unique materials printed simultaneously
  – Mixed Tray
  – Mixed Part
  – Digital Material

• Enables:
  – Simulation of overmolded products
  – Gray scale coloring of products
  – Variety of composite material blends & shore values
  – Coating a rigid core with a soft outer shell
Connex 500 Specifications

• Build Area: 19.3” x 15.4” x 7.9”
• X-Y Resolution: 600 x 600 dpi (~.001 jet diameter)
• Z Resolution (layers):
  – High Speed (HS) Mode: .0011”
  – High Quality (HQ) Mode: .0006”
  – Digital Material (DM) Mode: .0011
• Max Build Speed:
  – .8” per hour HS Mode
    • Varies by size and quantity of parts
• Materials:
  – Base Materials: 10
    • 6 rigid, 4 Elastomeric
    • 3 additional to be added in 1H2011
  – Digital Materials: 48
    • Currently up to 11 different materials can be present in a single part using combinations of VeroWhite and TangoBlackPlus
PolyJet Matrix Technology

Print Heads

Material A

Material B

UV Light

Build Tray
Application Summary

• Fine tune material properties to the end application
• Simulate over-molded & co-molded parts
  – Reduce time & cost of post processes
• Greyscale & Tones
  – Highlight features and areas of interest
• Variety of Shore Options
  – Improved simulation of elastomeric material properties
• Coating
  – Wrap 1 material type around another
• Backlighting applications
A World of Applications

- Overmold simulation
- Living Hinges
- Print pre-assembled components
Great Fit For Many Industries

- Medical Modeling
- Art & Architecture
- Film & Entertainment
**Current FullCure Base Materials**

<table>
<thead>
<tr>
<th>General Purpose 7XX Series</th>
<th>Durus 4XX series</th>
<th>Vero 8XX series</th>
<th>Tango 9XX series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Translucent FullCure720</td>
<td>DurusWhite FullCure430</td>
<td><strong>VeroWhite FullCure830</strong></td>
<td>TangoPlus FullCure930</td>
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<td></td>
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<td><strong>VeroBlue FullCure840</strong></td>
<td>TangoGray FullCure950</td>
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<td><strong>VeroGray FullCure850</strong></td>
<td>TangoBlack FullCure970</td>
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<td><strong>VeroBlack FullCure870</strong></td>
<td>TangoBlackPlus FullCure980</td>
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</tbody>
</table>

**FullCure705 - Support Material**

Currently offered by Roush
Resin Summary

• **FullCure720**: General purpose, Translucent, Amber

• **Vero Family**:
  – Colors: White, Black, Blue, Gray
  – Similar properties to Somos 14120 SLA resins

• **DurusWhite**: Polypropylene like

• **Tango Family**:
  – TangoBlack – shore A = 61, elongation = 48%
  – TangoGray – shore A = 75, elongation = 47%
  – TangoPlus – shore A = 27, elongation = 218%
  – TangoBlackPlus – shore A = 27, elongation = 218%
Current Digital Materials

• 48 Total
  – 22 Rigid
  – 26 Elastomeric
  – Enable tweaking of material properties to best suit the application

• Rigid Digital Materials
  – Small % of Tango with Vero = increased ductility & impact resistance

• Elastomeric Digital Materials
  – Small % of Vero with Tango
  – Additional Shore values of 30-90 in increments of 10
Upcoming materials for Connex

• VeroWhitePlus
  – Replacement for VeroWhite – superior properties

• Clear – NOW AVAILABLE!
  – Based on existing Vero formulations
    • Similar properties to VeroGray
    • Visual simulation of PMMA

• Helios - High Temperature
  – Thermal resistance of 65°C (149°F) out of the printer, 80°C (176°F) after thermal post curing

• DM-AB High Performance
  – Digital Material for Connex
  – High Impact properties nearing production ABS
  – Thermal resistance of 65°C (149°F) out of the printer, 90°C (194°F) after thermal post curing in an oven
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