The New 3D Inkjet Printing System for Forming Electric Devices on Demand

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Development Center

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Concept ~Synergy of “3” Key Technologies~

3D Freeform Electronic Device

3D Printer Technology
- Customization
- On demand manufacturing
- Material Extentability
- Scalability
- On-site production
- Supply chain renovation
- Main function is “Structure”

Key Words
- Market TOP Share (FUJI)
- Small and High density
- High Speed and High accuracy
- For SMT and Embedded

Printed Electronics Technology
- Full-additive patterning ➔ ECO
- Printable electrical function
- Rigid and Flex, Thin and Soft
- Freeform 2D, 3D Packaging
- Structural limitation because of “2D”

Parts Mounting Technology

Key Words
- On demand manufacturing
- Material Extentability
- Scalability
- On-site production
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- Main function is “Structure”
Development Activities

Process Development (in-house)

Software Development (@ supplier)

Prototype 3D electrical module manufacturing

Machine enabling technologies (FUJI core competence)

Continuous Collaboration Works
- Material Suppliers
- Key Hardware Unit Suppliers

Future Products
- Machine and System For 3D electrical module manufacturing
Machine: in-house Prototype Equipment

Machine can provide all the process required for manufacturing. XYZ stage moves back and forth between 3 process units.
Software: for designing and Production

**Input data**
- Electronic CAD
  - components data
  - connection data
- Mechanical CAD
  - structure data
- Machine parameter

3D data

**Output data**
- Production recipe
  - print image data
  - component position

2D data accumulation

$$(x_1, y_1, z_1) = (35.3, 21.2, 1.4)$$

$$(x_2, y_2, z_2) = (33.7, 18.5, 1.4)$$

$$(x_3, y_3, z_3) = (30.9, 17.2, 1.4)$$
## Trial Samples

### Trial Samples Examples

<table>
<thead>
<tr>
<th></th>
<th>Thermal Sensor</th>
<th>Gyro Sensor</th>
<th>Light Sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Samples photo image</strong></td>
<td><img src="image" alt="Thermal Sensor Image" /></td>
<td><img src="image" alt="Gyro Sensor Image" /></td>
<td><img src="image" alt="Light Sensor Image" /></td>
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<tr>
<td><strong>Function</strong></td>
<td>Thermal Sensing</td>
<td>Gyro Sensing</td>
<td>Light Sensing</td>
</tr>
<tr>
<td></td>
<td>+ Wireless data transportation</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>+ Solar power generation</td>
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<tr>
<td><strong># of components</strong></td>
<td>Embedded</td>
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<tr>
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<tr>
<td>Operation</td>
<td>Confirmed</td>
<td>Confirmed</td>
<td>Confirmed</td>
</tr>
</tbody>
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*4mm*
Applications idea

- IoT Sensors on-demand manufacturing
- Wearable device prototype manufacturing
- Customized personal devise or Toys, etc,..
- Other new applications (Now finding Idea & Partners)

Let’s Work Together for Market Expansion!