Functional and Reactive Fluid Deposition Using Xaar Inkjet

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Stand: A6 514
Jetting Capability

Technology

- Xaar 1003 - Recirculation – TF Technology
- Xaar 1003 - Grayscale
- Xaar 1003 - Non-contact process
- Xaar 1003 - Drop size 1-6 pL+ GS

- Xaar 1003 AM Printheads - Non-reactive fluid path layers
- Xaar 1003 AM Printheads - Protective coatings prevent ingress

- Xaar - Throw distance
- Xaar - Waveforms and ink approvals (Compatibility+ Jettability)
- Xaar - Uniformity and placement accuracy
- Xaar - Speed and reliability
### Xaar Services

#### Materials and Rheology
(Initial Fluids Review)
- Materials compatibility
- Physicals Measurement
- Complex Rheology

#### Sales Engineering
(Customer Support)
- Product installation
- Product training and support
- Customer project management
- Issue resolution

#### Adv. Apps and Tech
(Novel Inkjet Applications)
- Waveform creation
- Samples printing
- Applications methodology

#### Ink Applications
(Fluids Approval)
- Waveform creation
- Drop placement measurement
- Reliability testing & temp cycling
- Life test

#### Printhead Applications
(Applications Enhancement)
- Application review
- Waveform development
- Technology solutions

- Full development and integration support
- Not just the printhead – ink, waveform, drive electronics and application support
- A Xaar team each step of the way to increase time-to-market & ensure right-first-time development
Xaar 1003 AMp

- Applications that require tight control of fluid deposition
- 1-3 pL drops up to 8 grey levels
- Nozzle stagger optimised for high resolution (720 npi)
- Jet fluids with a broad range of viscosities
Xaar 1003 AMx

• Same architecture as Xaar 1003 AMP

• 6 pL drops up to 6 grey levels

• **Specialised** coatings increase robustness of internal components against attack from aggressive functional fluid chemistries

• **Enhanced sealing** around the outer components ensures zero ingress of functional fluids that could damage the printhead
Industrial Applications

• Photovoltaics - silver conductive tracks

• Printed electronics - copper seed tracks, solder and etch mask

• Semiconductors - nanoimprint lithography etch masking

• Additive manufacturing - 3D polymer printing and HSS

• Flat panel displays - isolation and obscuration layers

• Smart glass - isolation layers

• Biomedical applications - pharma and biochemical fluids
Example 1: Obscuration Printing

LCD displays to mobile devices:

- Have jetted layers 1, 3 and 5
- Non-contact process
- Scalable (small footprint)
- Very low fluid wastage
Example 2: Solar Cell Seed Layer

- 27µm width Ag seed layer
- Less Ag used = reduced cost
  - Smaller conductive track vs. screen print method
  - Xaar TF Technology enabled greater loading by weight % of Ag
  - Increased jetted reliably and higher conductivity tracks were achieved
- Low breakage:
  - Contact-free process
  - Very smooth wafer handling
- Result = 0.3% cell efficiency gain
Example 3: FPD Mobile Device Jettable Layers

- Working in partnership with ink vendors
- Ability to print multiple layers from obscuration to active
- Limited only by fluid formulation and consistent drop volume control
- TF Technology, Xaar 1003 AM printheads and waveform software enable wide scope of application uses in FPD
Summary

Xaar will support advanced manufacturing projects

- Internal and external support capabilities
- Technologies and expertise to assist

Xaar 1003 AMp (equivalent GS3)

- 1-3 pL drop size
- Provides control for fine features and very thin coatings

Xaar 1003 AMx (equivalent GS6)

- Aggressive and functional fluid protection
- Enhanced robustness
Thank you

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