



XAAR[®]

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)	Sales Engineering (Customer Support)	Adv. Apps and Tech (Novel Inkjet Applications)	Ink Applications (Fluids Approval)	Printhead Applications (Applications Enhancement)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <input type="checkbox"/> Materials compatibility <input type="checkbox"/> Physicals Measurement <input type="checkbox"/> Complex Rheology 	<ul style="list-style-type: none"> <input type="checkbox"/> Product installation <input type="checkbox"/> Product training and support <input type="checkbox"/> Customer project management <input type="checkbox"/> Issue resolution 	<ul style="list-style-type: none"> <input type="checkbox"/> Waveform creation <input type="checkbox"/> Samples printing <input type="checkbox"/> Applications methodology 	<ul style="list-style-type: none"> <input type="checkbox"/> Waveform creation <input type="checkbox"/> Drop placement measurement <input type="checkbox"/> Reliability testing & temp cycling <input type="checkbox"/> Life test 	<ul style="list-style-type: none"> <input type="checkbox"/> Application review <input type="checkbox"/> Waveform development <input type="checkbox"/> 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



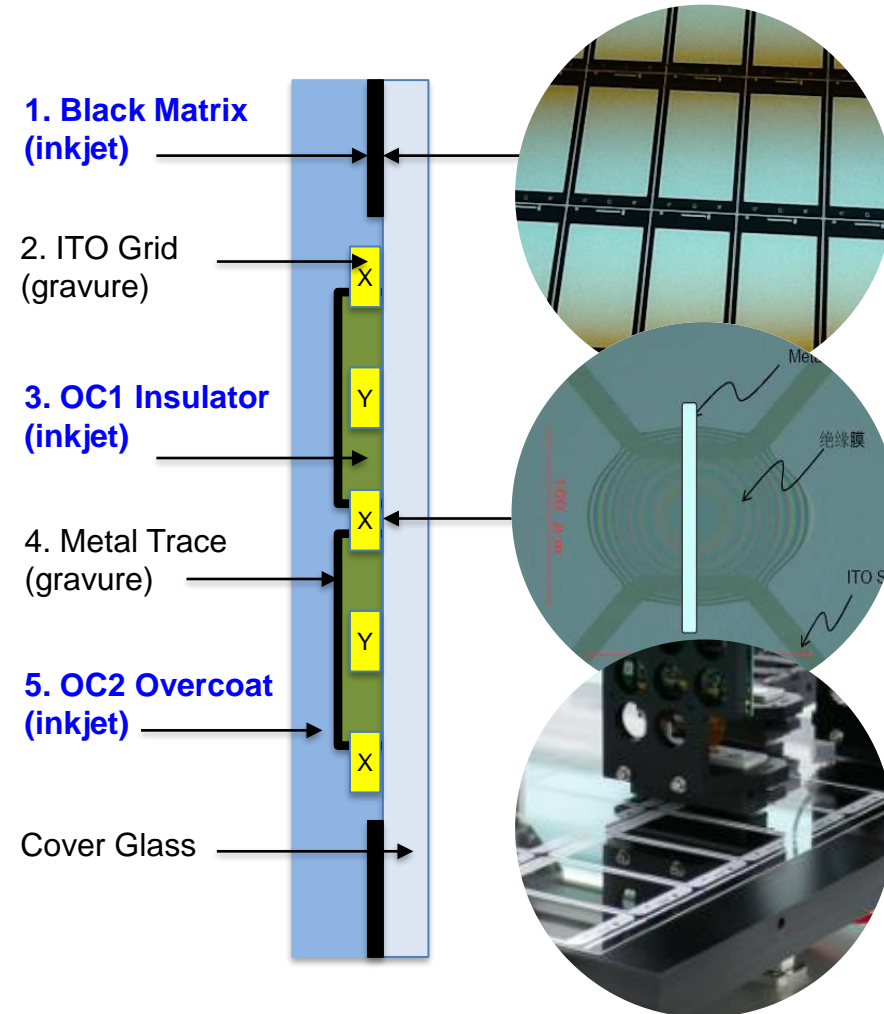
Industrial Applications

- **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

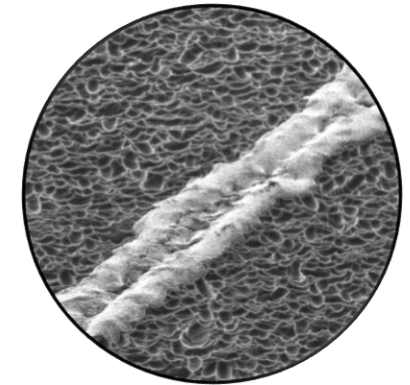
LCD displays to mobile devices:

- Have jetted layers 1,3 and 5
- Non-contact process
- Scalable (small footprint)
- Very low fluid wastage

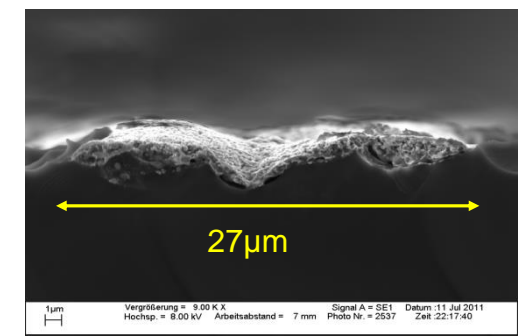


Example 2: Solar Cell Seed Layer

- 27 μ m 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

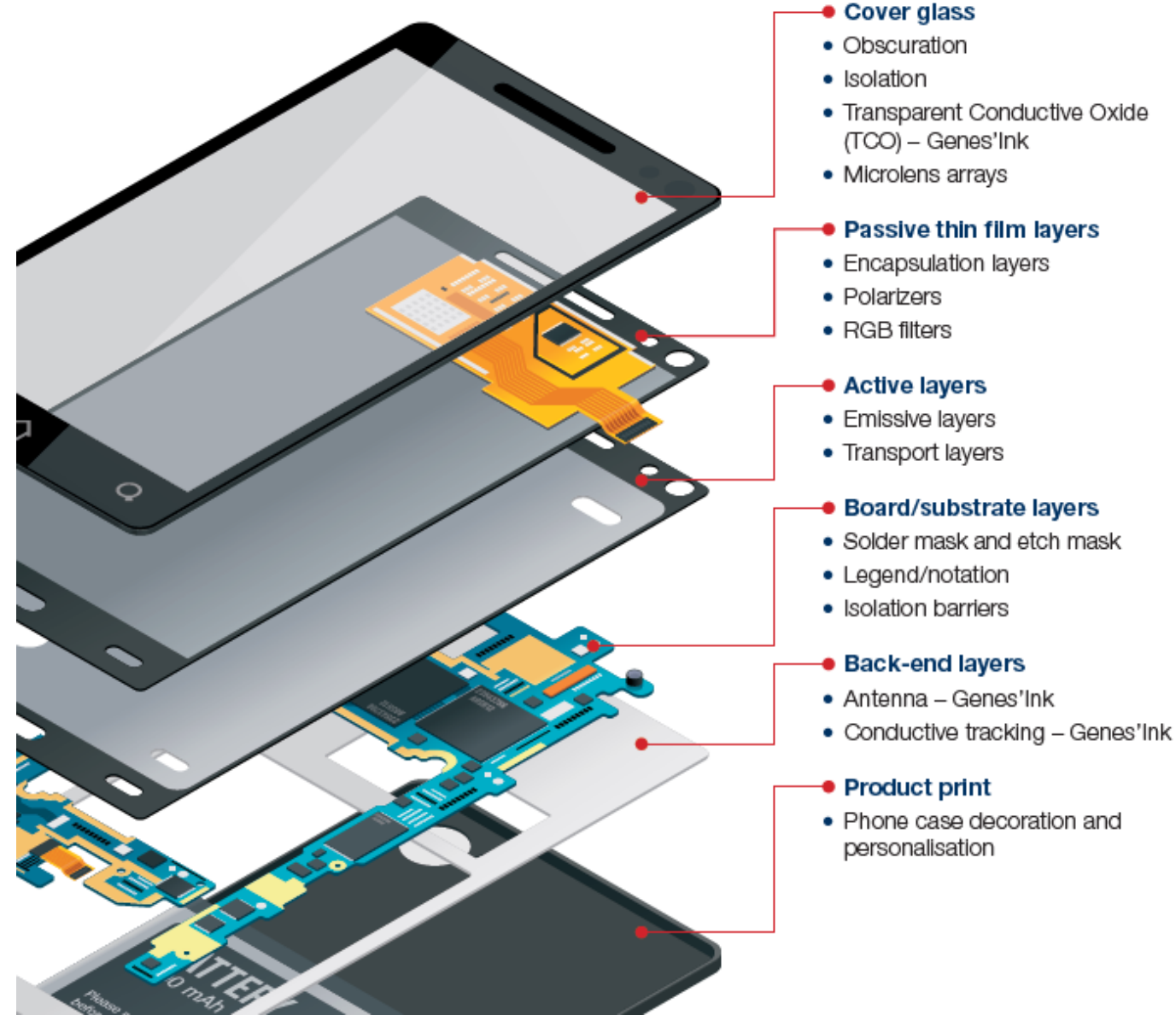


Nano-Jet Seed Layer



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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