About : Arrow Systems

• Arrow Systems, Inc. manufactures and distributes a wide range of materials and equipment for the digital printing and cutting markets.
• We serve a variety of segments within the indoor/outdoor advertising, signage and corporate branding market segments.
• Arrow has long been a leader, distributing and supporting products from world leaders, such as Gerber, Cooley, VIP, Rowmark, Direct Color Systems, and many others.
• With over 40 years in the packaging, printing and coating industries, with the best products in their class from Global leaders and innovators, we continue to seek out the best solutions for fast evolving markets.
About Kerajet

1997 Start of R & D.
1998 First tile printed by InkJet technology
1999 Constitution KERAjet S.A. (07-10-1999)
    Construction of two prototypes
2000 Presentation of technology in CEVISAMA
    " Alfa de Oro", awarded by the Spanish Society for Ceramics and Glass
    Presentation of the K350 KERAjet die QuickPaint (Ferro) at CERSAIE
2001 Industrial tests with 10 machines marketing begins in CERSAIE
2002 Introducing the KERAjet K560
2003 First KERAjet to working with ceramic pigments
2004 Presentation of the K700 in KERAjet CERSAIE
2005 Presentation of "Plotter plane P140 Laboratory" in CEVISAMA
2006 Introducing the KERAjet K700 / 360dpi in TECNOARGILLA
    Creation of the subsidiary KERAjet Italy.
About Kerajet

2007 Significant increase in sales K - 700 machines KERAmjet
2008 Presents the new GS KERAmjet in CEVISAMA
2009 First KERAmjet with printheads through-flow.
   Export Award granted by the Chamber of Commerce of Castellón
2010 Starts construction of its new headquarters (30,000m²)
   Over 500 printers installed around the world.
2011 KERAmjet opens its new headquarters
2012 New P200 plotter.
   The new set of KERAmjet machines is released at TECNARGILLA (MASTER, ECO and MINI)
   "2011: Company of the year" award. • Export award by the Castellón Chamber of Commerce.
2013 Over 1000 printers running all over the world.
   New branches in BRASIL, MEXICO and CHINA.
   "Mundo Cerámico 2013" award (Sao Paulo, 8/Oct).
   Gold insignia by the Spanish Ceramic Association (ATC).
About Kerajet

2014  K8 printing head (digital glaze printing).
      K9 dry powder print head.
      “2014 Gold Alfa”, awarded by the Spanish Society for Ceramic and Glass.
      Export award by the the Castellón Chamber of Commerce.
      Digital production lines by KERAjet.
      Castellón Businessmen Association award
      Over 2000 machines running in more than 34 countries.
      Kerajet 100% Spanish technology leading the market.

.2015  Digital line with K8 print heads (water based glaze).
      Digital line with K12 print heads.
      Digital line with K9 print heads (dry powder).
      Digital production lines by KERAjet.
      Over 2500 machines running in more than 34 countries.
      New demo plant.

2016  Single firing production line complete Spanish technology.
      Introducing third firing line complete, kiln included.
      Collaboration with other machinery manufacturing companies: Errece and Innova
Kerajet Premises
QUALITY

IMPROVING TECHNICAL PRODUCTS

• Digital control of all manufacturing
• Density control
• Thickness Control Part
• Thickness Control Part
• Control of digital printing
PRODUCTIVITY

• Saving more than 70% on energy
• Saving of raw material
• Elimination of excess stock
• Control of production is one design file
• Change product manufacturing digitally
A new use
New possibility
Simple to do

HOW IS FIBRE CEMENT BOARD DECORATED?
APPLICATION
APPLICATION
APPLICATION
Inks: inorganic pigments

Coatings Primers

Manufacturing process

Design

Software

Inkjet machines
Inorganic Resistance for inkjet – decorated concrete products

• We have developed a new line of products to provide long-lasting decorative solutions for construction materials such as concrete panels, pavers, cladding, plasterboards and fiber cement boards.

• The decoration solutions are based on a new range of Inorganic pigmented inks that can be applied using proven, industrial digital inkjet technology.
Inorganic Resistance for inkjet – decorated concrete products

Decoration process is simple and cost effective, and it provides long – lasting decoration.
Decoration involves 3 type of material: **Primer, Inorganic Inks and Coating.**

- The concrete Panels first pass a spray booth (or roller) for application of a transparent, colored or white primer.
- The Primer plays an important role in the bonding of subsequent layers, optimizing the amount of ink required and providing brightness.
- Decoration follows with inorganic pigmented inks using digital inkjet drop on demand technology.
- These innovative inks yield a wide color gamut. Their inorganic nature assures durability and UV resistance. Pigment stability and age resistance have been independently tested and certified.
Inorganic Resistance for inkjet – decorated concrete products

✓ A matte or glossy top coating is then applied to provide the final properties required for intended product use.
✓ The technology anticipates future needs.

**Advantages of inkjet printing over other decoration techniques:**
- Zero set-up costs
- Cost-effective shorts run
- Fast product change-overs
- Endless designs and Patterns
- Just-in-time product customization
- Ideal for all types of porous substrates
- Long – lasting applications
Inorganic Resistance for inkjet – decorated concrete products

Facts and Figures
• Primer: Water Based Acrylic Resin
• Inks: 7 Color
• Coating: UV curable, water-based and solvent systems.
• Wide Gamut Range
• Quality Image: 400 DPI
• Adhesion Resistance
• UV Resistance
• Decorative Solutions Patent Pending
Inorganic Resistance for inkjet – decorated concrete products

Loss of color (%)

<table>
<thead>
<tr>
<th>Years after printing</th>
<th>Inorganic vs. Organic inks</th>
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</thead>
<tbody>
<tr>
<td>0%</td>
<td>Inorganic inks</td>
</tr>
<tr>
<td>-10%</td>
<td>Organic inks</td>
</tr>
<tr>
<td>-20%</td>
<td></td>
</tr>
<tr>
<td>-30%</td>
<td></td>
</tr>
<tr>
<td>-40%</td>
<td></td>
</tr>
<tr>
<td>-50%</td>
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</tr>
</tbody>
</table>

Years after printing

Inorganic vs. Organic inks
**Process**

1. **Pre-Treatment**
   - Adhesion and color development
   - Product preparation and primer application one or more stages might be required depending on initial product

2. **Digital Decoration**
   - Inorganic inks and permanent colors

3. **Finishing**
   - Final protection and product properties
   - Coating application one or more stages might be required depending on final product features
   - Final treatment one or more stages might be required depending on coating and final product technical features

*KERAjet®*

Arrow Systems INC
ARROW SYSTEMS INC. (U.S.A.)
1-888-697-2749 (US / Canada)
1-888-577-5087 (US / Canada)
Email: sales@arrsys.com
Websites: www.arrsys.com
Thank you for your Patience and Attention !!!