Who we are

LEADING THE DIGITAL INKJET REVOLUTION

We are a world leader in the development of digital inkjet technology. Our technology drives the conversion of analogue printing and manufacturing methods to digital inkjet which is more efficient, cheaper and more productive than the traditional methods it replaces. We design and manufacture printheads as well as systems for product decoration and industrial 3D Printing which use our inkjet technology.

The markets we serve

Industrial
The industrial markets we serve include Ceramics, Decor, Textiles, Advanced Manufacturing and industrial 3D Printing.

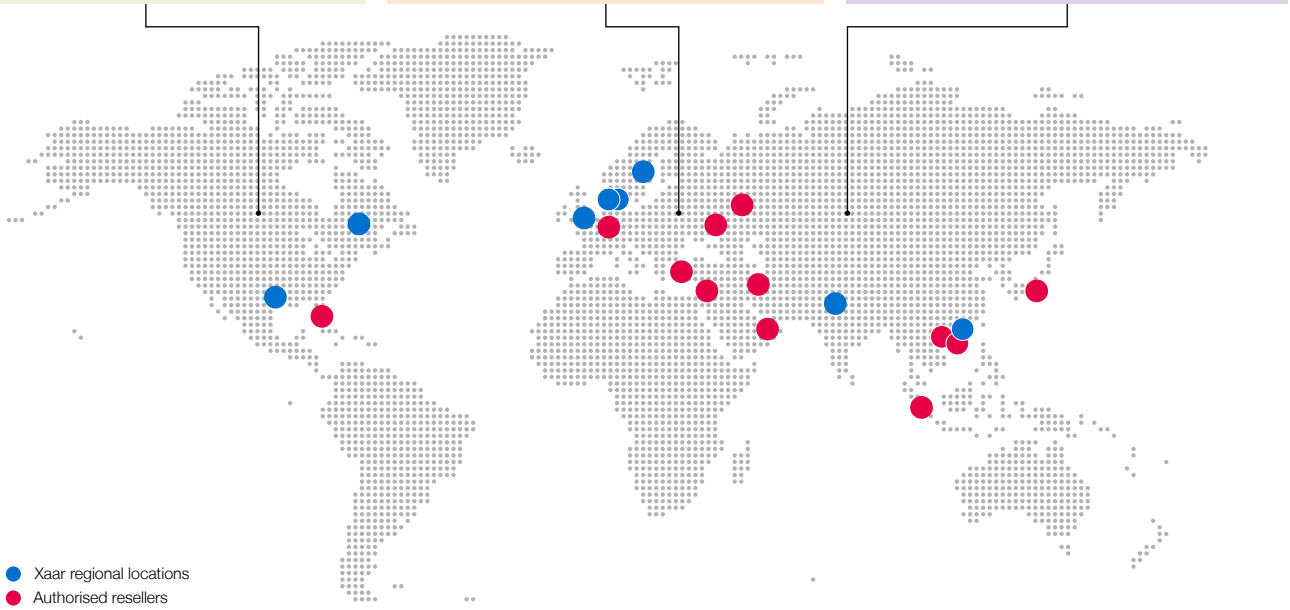
Packaging
The Packaging sectors we serve include Coding and Marking, Primary Labels, and Direct-to-Shape printing.

Graphic Arts
The Graphic Arts sectors we serve include Grand- and Wide-format graphics.

See page 8 to read about our markets

Where we operate

Americas	EMEA	Asia
Revenue £19.4m	Revenue £29.8m	Revenue £50.9m
Offices 2	Offices 5	Offices 2
Employees 79	Employees 514	Employees 10



What is digital inkjet?

Digital inkjet is an extremely versatile non-contact technology; it can be used to apply a wide range of fluids with precision accuracy to a range of different substrates. There are two key types of inkjet printing – Continuous Inkjet (CIJ: continuous flow of ink) and Drop-on-Demand (DOD: a drop of ink is only produced when it is needed). Xaar works with Drop-on-Demand inkjet technology.

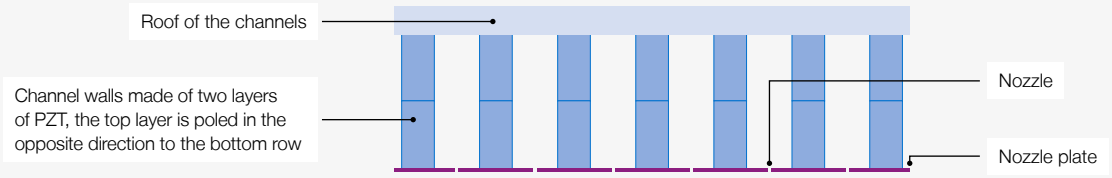
DOD inkjet is divided into three classes – Valvejet, Thermal inkjet and Piezoelectric inkjet, and this last class is Xaar's specialism. Piezoelectric inkjet technology uses piezoelectric material as a key active component within the inkjet printhead. Piezoelectric material exhibits a phenomenon called the piezo effect, in which, when a force is applied to certain materials, a charge (electricity) is produced.

Another effect, which is called the reverse piezo effect, occurs when you apply electricity to the material. In this case the material moves.

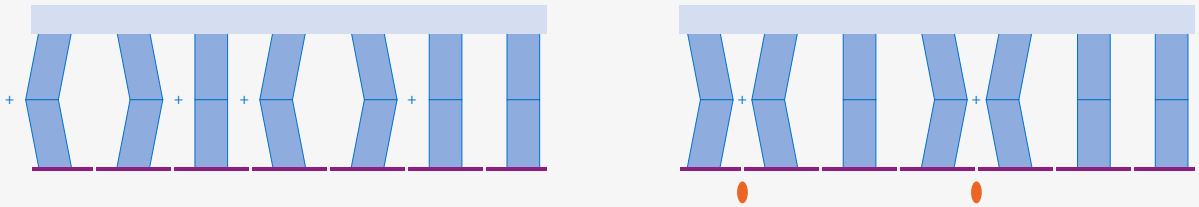
Piezoelectric printheads incorporate lead zirconate titanate (PZT), which is a manufactured piezoelectric material. All piezo printheads work in the same way. The PZT is deformed in order to fire an ink drop.

Xaar Piezoelectric printhead

The following series of diagrams illustrates how a standard piezoelectric Xaar printhead fires ink drops. The Xaar 1003 printhead has two rows of 500 channels, with a nozzle in each channel.



The diagram above shows the ink channels in a 'neutral' state. i.e. inactive and non-firing.



The diagrams above show what happens when a voltage is applied to the channel walls. As there are two layers of PZT which are poled in the opposite direction, when a voltage is applied, the PZT walls move in a chevron-shaped motion. As the walls move, acoustic waves are generated.

The acoustic waves travel up and down the channel. When the waves meet in the middle of the channel, an ink drop is ejected. Firing nozzles are separated by two inactive non-firing channels. Firing is staggered across the printhead.

Play video

What are the benefits of digital inkjet?

- Cost effective production with no limit on the run length and no minimum order
- Mass customisation and variable data printing is easy
- Short print runs for limited editions or localised promotions
- Printing onto irregular shapes is possible
- Rapid order turnaround once the design is agreed
- Simple workflow with quick and easy job setup and changeover
- Avoids the complexities, cost and waste associated with analogue printing
- Very controlled fluid deposition.