**VIDEOJET.**

Zero and low odor coding solutions for candy and confectionery manufacturers

Certain confections, like chocolate, are susceptible to odor absorption, requiring special consideration when selecting a coding solution. The solution you choose should not impact your productivity.

Your lines run fast, run at long intervals and are producing products that are sensitive to environmental conditions. A coding technology can be perfect for your line speeds by drying quickly, but if the ink has a strong solvent base and is not ideal for products sensitive to environmental odors, then there is potential risk to product quality.

In this technical guide we will discuss the four main coding technologies that are ideal for coding candy and confectioneries that require a zero or low odor environment.
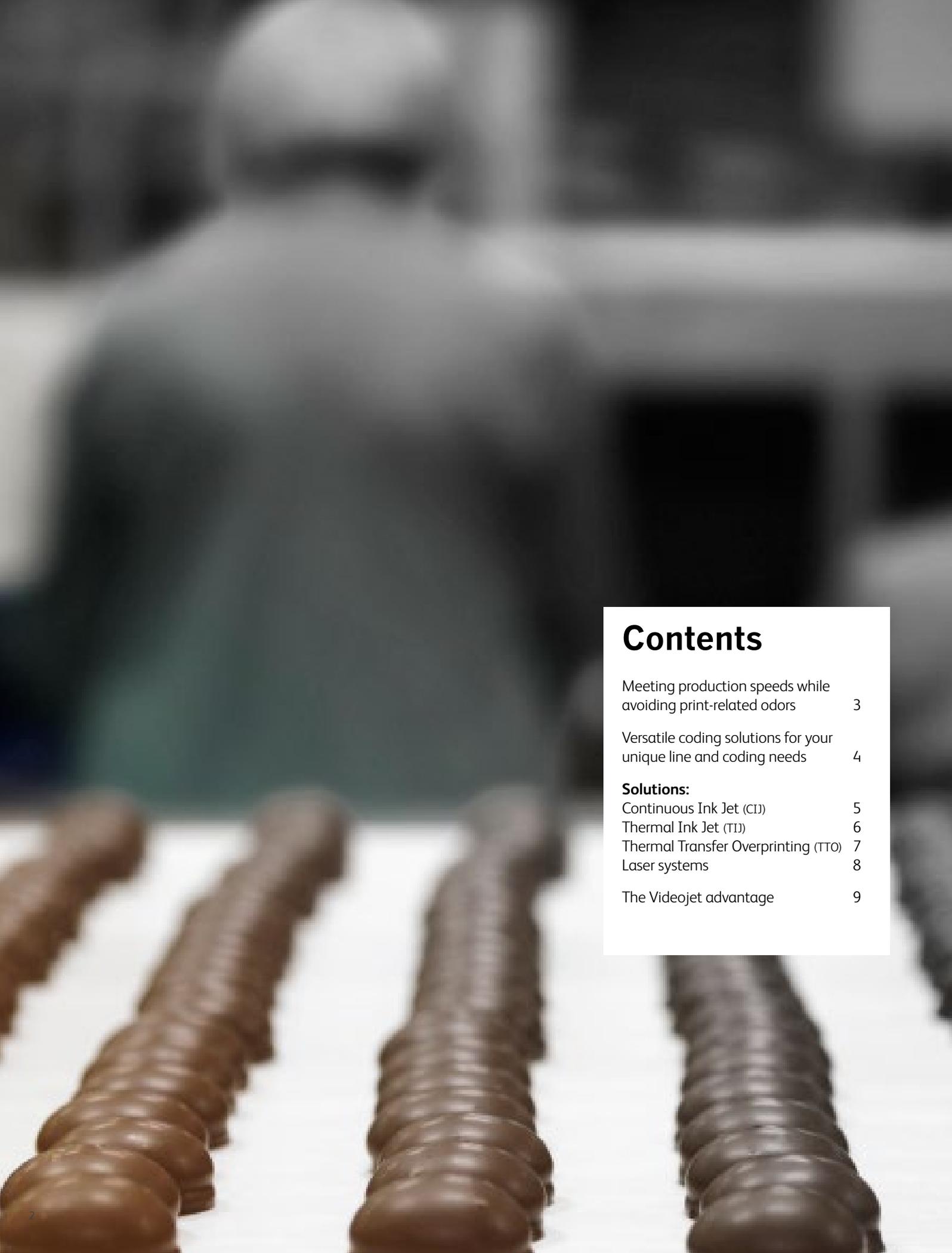
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Meeting production speeds while avoiding print-related odors

To meet the needs of candy and confectionery companies, packaging equipment manufacturers have pushed their machines to the limit and continually release products onto the market that can package at higher speeds.

Also, trends have pushed manufacturers to produce single serve and smaller portion packages which run at higher throughput speeds than full-sized products.

Along with these growing speed requirements, there is also greater product variety and packaging formats that create further complexity for producers. For example, it is not uncommon for a producer to package individual chocolate covered cookies on one line at 65 products per minute, while also producing single bite chocolates on another line at over 350 products per minute. A few producers can even go as high as over 500 products per minute.

These speeds can be challenging for some coding technologies as that they have to be able to print quickly and produce codes that are ready for contact with other packages or the rails of the conveyor shortly thereafter. Though several digital coding technologies can meet the substrate and speed requirements of candy and confectionery producers, some producers have been hesitant to incorporate technologies that utilize MEK-based inks. One common misconception is that product quality would be negatively affected by all inks used in CIJ and TIJ printers. While it is true that these technologies use solvent-based inks, not all printers and inks are created equal.

Versatile coding solutions for your unique line and coding needs

Candy and confectionery companies can choose from a variety of analog coding technologies, such as roller coders or hot stamp printers. They also have a selection of digital printers, such as laser or TTO to meet their needs. Digital printers offer more reliability, error-proofing, faster changeovers and can typically offer lower total cost of ownership as compared to analog printers.

Digital printers are perfectly adept at meeting line speed requirements across a range of flow wrapping applications from slow speed chocolate wrapped cookies to ultra-fast individual bit size chocolates. TTO, CIJ, TIJ, and laser systems are particularly well suited for coding at high speeds with zero or low odor emissions and can offer a common software user interface for managing your varied print technologies.

Line speed, packaging substrate, required code location and odor emission tolerance are some of the main criteria that will determine which printing technology producers will use. Line integration is also very important to consider as that different technologies can be integrated in different places on your line. Integration into the packaging machine (flow wrapper, cartoner, vertical form fill and seal, etc.) is ideal as that it provides the most control for code placement on packaging and therefore produces higher quality codes. Although the conveyor is the easiest location to integrate, such placement may generate shaky codes due to the natural vibration of products on it. Below is an example of a production line showing where the varying printing technologies can be integrated.
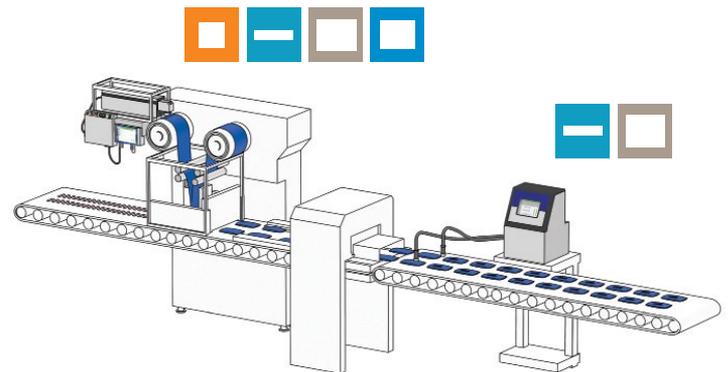
Laser Marking Systems
Beam of infrared light that creates marks where the heat of the beam contacts with the package surface.

Thermal Ink Jet (TIJ)
Ink-based non-contact printing that is generally used to print 2D DataMatrix and other bar codes.

Continuous Ink Jet (CIJ)
Ink-based printing of up to five lines of text and 2D bar codes on a variety of packaging types, including stationary packaging via traversing systems.

Thermal Transfer Overprinting (TTO)
A digitally controlled printhead precisely melts ink from a ribbon directly onto flexible films to provide high resolution, real-time prints.

Continuous Ink Jet

Why this technology?

CIJ printers produce simple lines of code and are ideal for flow wrapping applications. They are cost-effective for low-to-medium volume producers and are easily integrated into existing production equipment. CIJ inks are fast-drying and can accommodate high-speed confectionery lines up to 500 packs a minute. While this coding technology does use solvent-based inks (like MEK), advanced manufactures do offer CIJ inks that are appropriate for use with odor-sensitive products such as chocolate. This coding technology is also non-contact and will not puncture packaging.

Application considerations

When CIJ is your technology of choice, you should use inks such as V421 which is an MEK-free, methanol-based ink that is virtually odorless and is ideal for chocolate flow wrapping lines. Well suited for moderate-speed lines, this ink dries in around two seconds (depending on your application) and has good adherence on common confectionery packaging including polyethylene bags and shrink wrap. When higher speed is required, the V462 ethanol-based ink dries in as fast as one second. This ink has a low odor profile and rivals adhesion of traditional MEK-based inks on glossy substrates.

Thermal Ink Jet

Why this technology?

Not unlike CIJ, TIJ also uses solvent-based inks that are fast-drying and are therefore ideal for fast-moving, high-volume production lines. Benefits of TIJ include a small footprint, maintenance simplicity, and ease of integration into production lines. Unique to TIJ is its ability to print tall, high resolution codes, including bar codes or codes for gaming applications. While TIJ printers do emit odor, it is only present when they are actively printing, unlike other technologies that emit odor the entire time they are turned on. Traditional TIJ printers are ideal for printing on porous substrates, but with recent advances in technology, high resolution printing on non-porous substrates is now also a possibility. Like CIJ, TIJ is also non-contact and will not puncture packaging.

Application considerations

Before now, TIJ hasn't been an ideal solution for candy and confectionery due to its less than stellar adhesion on non-porous substrates. Videojet has created the first TIJ cartridge utilizing MEK-based inks. This helps enable producers to print on non-porous materials including foils, films and plastics that are common in flow wrap applications. Nevertheless, the amount of MEK used is only a fraction of that used in common CIJ inks, thus it has a low odor impact and lower environmental emissions. Finally, unlike other TIJ systems, the patent-pending Videojet Cartridge Readiness System™ helps ensure consistent code quality, even after interruptions in production flow.

Figure 1

Step 1:
Waiting for print signal

Step 2:
Heat generation creates steam bubble

Step 3:
Bubble presses ink through nozzle

Step 4:
Bubble shrinks, ink refills cavity

Heater

Nozzle

Ink
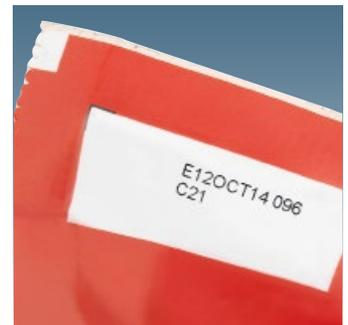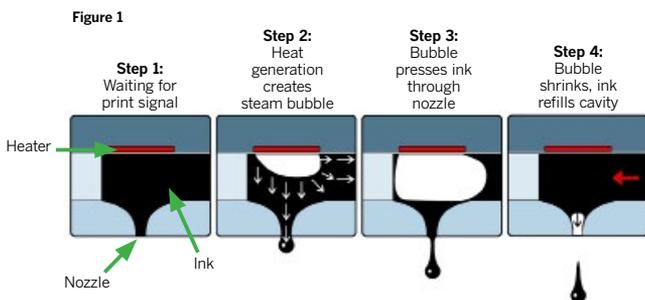
Thermal Transfer Overprinting

Why this technology?

Unlike CIJ and TIJ, TTO does not use solvents and thus has no environmental emissions. It instead uses ribbon that once used, can be disposed of without special hazardous substance handling. Like CIJ and TIJ, TTO will not puncture packaging. TTO has virtually instant dry time and thus is ideal for flow wrappers that don't provide much time before products come into contact with rails or other products.

One of the main advantages of this technology is its ability to print high resolution information like logos, nutritional facts, batch numbers and best by dates. This high resolution capacity helps enable confectionery companies to use generic film for different products and code the product-specific information during packing. This saves in changeover time and inventory holding costs. Technology limitations include typical print speeds of not more than 400 packages per minute and needing to stop the line to change the ribbon.

Ribbon Feed

Material Feed
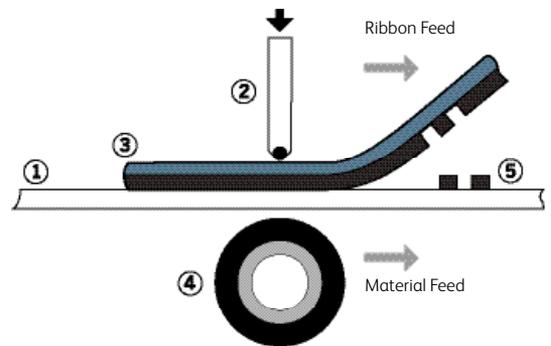
Application considerations

TTO printers must be integrated directly with the packaging equipment. While the function may be the same, packaging equipment from different manufacturers are built differently and can require specialized brackets and other accessories. Therefore, it is important to find a company with the right experience, software, and accessories to complete the integration seamlessly. Finally, TTO printers can be extremely reliable and require minimal maintenance as compared to other coding technologies. Some TTO printers also maximize the use of ribbon, which leads to ribbon savings and reduces downtime required for ribbon replacement.

Laser Marking Systems

Why this technology?

Laser coding is ideal for high volume operations and is well within the 400 parts per minute that is typical in candy and confectionery production. Instead of "printing" on products in the traditional sense, products are engraved with their respective coding data. Inherently ink and fluid-free, lasers don't have the same concern of ink odor and its potential to affect uncovered product. However, unlike CIJ and TIJ printers, lasers do require a fume extractor and filter (which are the only consumables for this coding technology) that immediately remove any particles generated in the laser marking process. An added feature of this technology is its environmental friendliness, as lasers don't emit Volatile Organic Compounds into the atmosphere. With correct laser configuration there is little risk of puncture to packaging. However, a good alternative to avoid this challenge altogether is to code on the flap of the wrapper and avoid exposure to the main layer of protection on the package. .
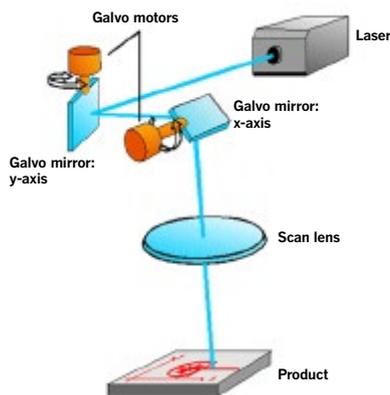
Application considerations

Laser is a great choice for fast speeds and low maintenance. Vidoejet offers larger marking fields that can code two packages virtually at the same time and save you the unnecessary expense of purchasing two lasers to do the same amount of work. A large marking field also helps optimize power settings and avoid film burn through. With the largest selection of laser configurations in the industry, we can help you find the right configuration for your application. This means that you don't have to buy a laser with more capacity than you need (and at greater expense).

The Videojet advantage:

With over four decades of industry experience, Videojet understands not only coding technology, but also the nuances of candy and confectionery manufacturing.

We have the expertise to provide guidance on how each coding solution and its respective consumables can potentially interact with your product. Add our field-based application experts, our state-of-the-art sample laboratories, and the biggest service network in the industry, and we can help you make the right coding decision and product-friendly ink selection for your specific application need.

Depending on your specific application and business needs we can provide:
• Zero or low odor solutions
• High quality codes, from simple to complex
• Good adhesion, even on glossy packages
• High-speed print capabilities including flow wrapping lines
• Environmentally-friendly solutions

For more information on our full-line of products and services, contact your local sales representative and let one of our experts do a free production line audit. Or to learn more, visit www.videojet.com.

Peace of mind comes as standard

Videojet Technologies is a world-leader in the product identification market, providing in-line printing, coding, and marking products, application specific fluids, and product life cycle services.

Our goal is to partner with our customers in the consumer packaged goods, pharmaceutical, and industrial goods industries to improve their productivity, to protect and grow their brands, and to stay ahead of industry trends and regulations. With our customer application experts and technology leadership in continuous ink jet (CIJ), thermal ink jet (TIJ), laser marking, thermal transfer overprinting (TTO), case coding and labeling, and wide array printing, Videojet has more than 325,000 printers installed worldwide.

Our customers rely on Videojet products to print on over ten billion products daily. Customer sales, application, service, and training support is provided by direct operations with over 3,000 team members in 26 countries worldwide. In addition, Videojet's distribution network includes more than 400 distributors and OEMs, serving 135 countries.

- Global Headquarters
- Videojet Sales & Service Offices
- Manufacturing & Product Development
- Countries with Videojet Sales & Service
- Countries with Videojet Partner Sales & Service
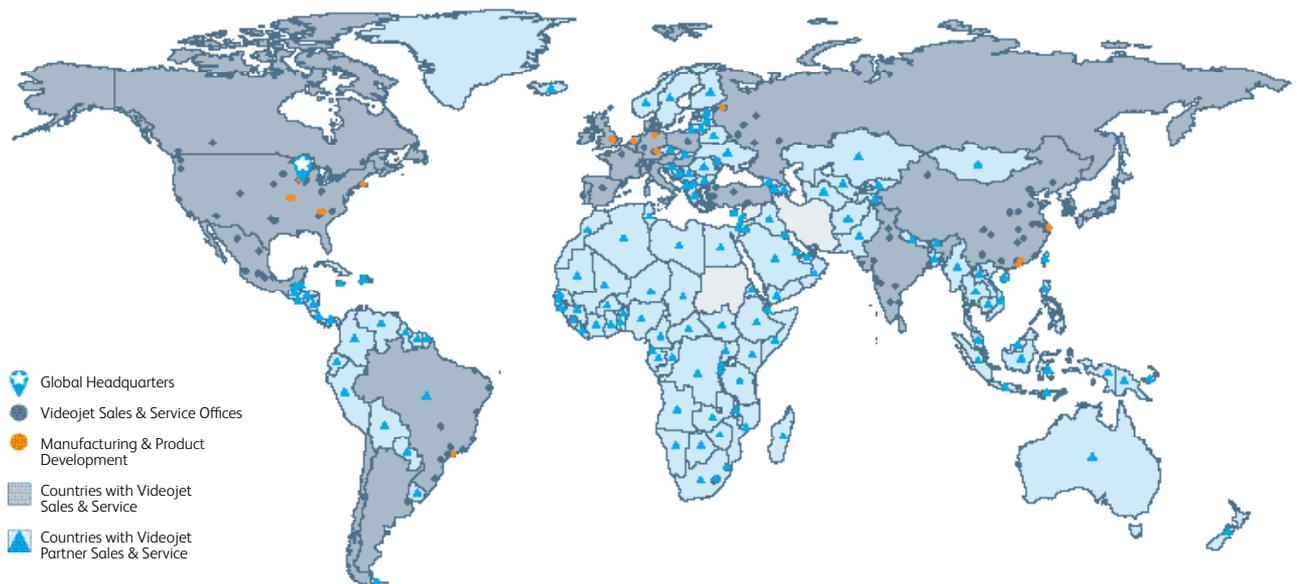
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