2016

COMPREHENSIVE GUIDE TO DATE AND BATCH CODING IN THE CRAFT BREWING INDUSTRY

Diagraph
An ITW Company

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ABOUT DIAGRAPH

As a leading provider of marking and coding technology, Diagraph works with breweries of all sizes across the country to fulfill product traceability needs that can easily scale up for future capacity and complexity. Diagraph manufactures batch coding and date coding technologies that span the entire packaging line — from primary product to secondary packaging all the way to pallet labeling.

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INTRODUCTION

As the craft brewing industry continues to capture increased market share, the pressure for increased production volume creates the envious complication of navigating new coding and marking challenges. Though there is a logistical need to meet lot and batch tracing requirements (and often to comply with Brewer Association recommendations for packaging or “best by” date labeling), craft brewers are eager to keep their time and financial resources focused on the delicious brews they are passionate about. This means ideal marking and coding solutions need to be cost-effective, reliable and low-maintenance.

Given the wide range of available technologies, how can craft brewers identify coding and marking technology best suited to meet their unique needs?

Resource:
Brewer Association Recommendations for Date/Lot Coding
https://www.brewersassociation.org/best-practices/quality/date-lot-coding/

SUPPLIER CONSIDERATIONS

Craft brewers are often eager to grow at a pace that is aggressive but allows them to maintain the quality production they are passionate about. A key component in this is to identify a coding and marking supplier well-equipped to meet their unique coding and marking needs. When starting out, craft brewers do not need massive systems designed for more industrial, ultra-high volume beverage corporations or limited basic technologies that will not grow alongside their business. Instead, they need highly scalable technologies that can adapt and grow as production expands.

To find just the right fit, craft brewers need to identify a supplier that offers the following characteristics:

1. Wide Technology Offering

Identifying a supplier with a wide technology offering including CIJ (continuous ink jet), laser, carton coding and labeling solutions will help ensure a craft brewer finds the best possible system for their unique needs. A supplier familiar with all of these technologies can speak honestly about the pros and cons of each with a focus on finding the best technology for each unique brewer. In contrast, a supplier that specializes in only one of these technologies will be focused on promoting that particular system. Also, a supplier that can provide quality coding and marking solutions for both primary and secondary packaging can simplify operations by providing a single point of contact.

2. Price Tag Transparency

It is unfortunately common practice for suppliers to try to lure customers with low price tags that mask a variety of hidden costs. To avoid costly surprises, don't be seduced by low sticker prices. A little extra time invested up front in studying features included and excluded can save a great deal of time and expense down the road. Key performance features to look for are presented in more detail below. However, "hidden" costs often include sensors for labeling technologies and print heads for ink jet systems. Labeling technologies often require sensors that indicate when labels are running low, when a label is present and what height a package is for proper operation. Each of these three sensors can easily add $300 to $500 to a price tag- raising the price tag as much as $1,500. When comparing ink jet systems for carton coating, the lifespan of an ink jet print head can vary from three months to 10 years. Making sure you select an ink jet system with a durable, repairable print head can lead to significant cost savings.

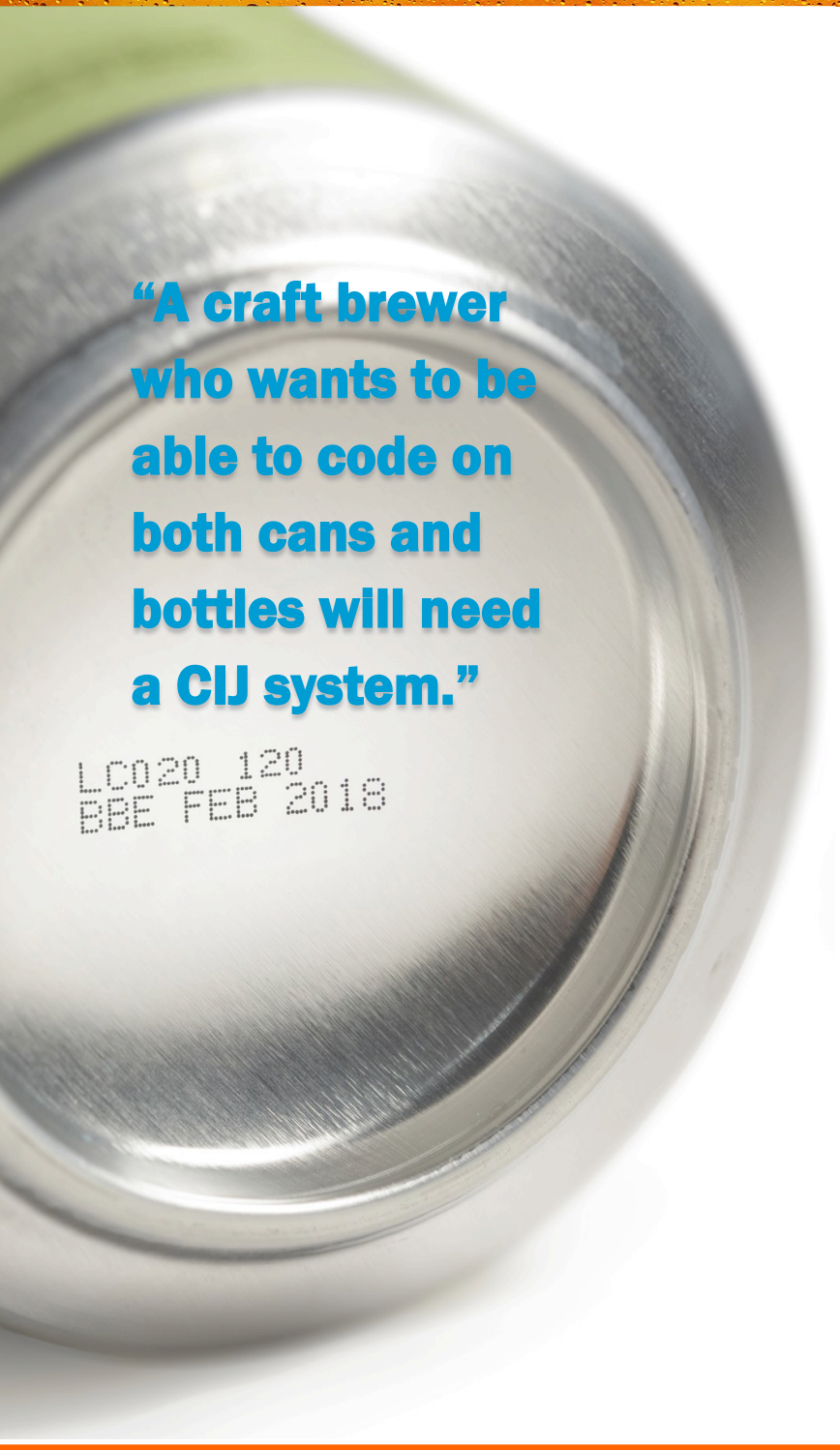
3. Automation & Integration Support

As a craft brewer grows, increased production requires a shift to automated filling and packaging lines. In addition to selecting coding and marking equipment, the craft brewer will need to install and integrate various material handling technologies such as conveyor belts and descrambling tables. In order to keep precious time and resources focused on quality beer, it is extremely helpful to find a coding system supplier that can cost-effectively serve as project manager in getting your automated lines up and running. Such a supplier can provide you with a number of technology options within your budget range and take care of installation, integration, and training to leave you with a fully automated line.

4. Strong Service Support

For many growing craft brewers, a coding and marking system is the first industrial printer they have purchased. Unlike common desktop printers that users are familiar with, these printers will require regular maintenance to avoid costly downtime. When comparing technology options look for technologies that offer market-leading durability and reliability as well as suppliers that offer cost-effective national service support. Check to see if the technology is designed to allow you to quickly and easily do regular maintenance yourself to save time and money. Also make sure your supplier is available to provide regular (typically every 18 months) product service and emergency support to avoid downtime in case you have any production issues.

PRIMARY PACKAGING CONSIDERATIONS



"A craft brewer who wants to be able to code on both cans and bottles will need a CIJ system."

Different printers are needed for printing on your primary (bottle or can) package and on your secondary (outer box) package. Continuous ink jet (CIJ) and laser are the most common options for printing text, graphics, barcodes, QR codes and other codes onto primary beverage packages. The points below can help a craft brewer identify the technology that best suits its unique needs.

1. Package Type

When selecting a coding system for your primary packaging, the first step is to consider what type of material you will be printing on. Keeping in mind that you can reasonably expect the printer to last five to seven years, what types of packages are you using now and do you plan to use in the years ahead? Bottles can be coded with either laser or CIJ systems. Cans are coded with CIJ technology. This means that a craft brewer who wants to be able to code on both cans and bottles will need a CIJ system.

2. Production Volume

At what volume of production does automated coding become more cost effective than manual coding of beverage packages? Assuming that manual application involves table top printing directly onto a label before applying and that automated costs include up-front capital as well as daily consumables and parts/service the answer is when daily production reaches roughly 4,500 units for CIJ and approximately 6,000 units for laser.

	0	5,000	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000
Manual Coding	$0.00	$50.00	$100.00	$150.00	$200.00	$250.00	$300.00	$350.00	$400.00	$450.00
CIJ Coding	$44.17	$44.41	$44.65	$44.88	$45.12	$45.35	$45.59	$45.82	$46.05	$46.29
Laser Coding	$60.76	$60.76	$60.76	$60.76	$60.76	$60.76	$60.76	$60.76	$60.76	$60.76

This comparison assumes that the manual coding is done by a table top printer printing directly on the label before hand applying. The automated coding technology costs include the up-front capital equipment purchase (divided by 288 days of production), daily consumables (ink and solvent for CIJ), and parts and service costs.

3. Features to Look for in a CIJ Printer

There are a number of quality CIJ technologies available that offer reliable, high-quality printing onto both bottles and cans. When comparing systems - it is helpful for a craft brewer to look for these features:

A. Downtime Figures

To quickly grasp which CIJ systems are truly the most durable, compare how frequently the print heads (the part of the printer with the most wear and tear) need to be cleaned. Some systems feature print heads that need to be cleaned as often as once or twice a week. Other more durable technologies can be cleaned as little as once per quarter. A system with a more robust print head can generate as much as $900 in annual savings in labor costs alone in addition to saving precious production time.

B. *Warning Window*

Systems that provide only one hour notice when ink is running low require an operator to check the supply at least once an hour or risk running out of ink and losing valuable time to recode. Quality systems should provide as much as eight hours notice before the fluids need to be replaced. Even one hour of a coder running with no ink could cost roughly $375 in lost production.

C. Service & Maintenance Costs

In addition to finding a provider with quality national technical support, finding a technology designed for easy self-maintenance can generate significant time and cost savings. Make sure that all of the system´s critical service parts are in one place and that there is a simple digital guide to walk the operator through an easy update of this self-service module.

4. Features to Look for in a Laser Printer

Craft brewers who plan to code exclusively onto glass bottles can consider laser technology to print onto the bottle or label. Though these systems require a larger upfront investment, the elimination of a need for inks and solvents does generate savings. Maintenance is often simpler than that of a CIJ system. When comparing systems, be sure to consider:

A. Durability

Laser tubes are the component of a laser system that have the greatest impact on durability. Tubes that can operate at lower intensity will have a longer life. A quality system should offer a laser tube life of at least five years. Another key durability factor to consider is the tube enclosure. Enclosures made out of stainless steel will be significantly more durable than those made of plastic.

B. *User Interface*

As breweries grow, they often face a need to more frequently change and edit messages and laser settings. Make sure the user interface is well-designed to make this a simple process.

PRIMARY PACKAGING CODING TECHNOLOGY COMPARISON

Continuous Ink Jet (CIJ)	
PROS	**CONS**
Substrate Flexibility –Can print on either bottles or cans	**Consumables** – Ongoing costs of consumables
Cost – Up front capital expense is lower than that of laser	**Code Quality** – While fully legible, the code quality of CIJ is not as high as laser
Production Flexibility – Printers can easily be moved from one production line to another	**Maintenance** – CIJ requires more ongoing attention than laser.

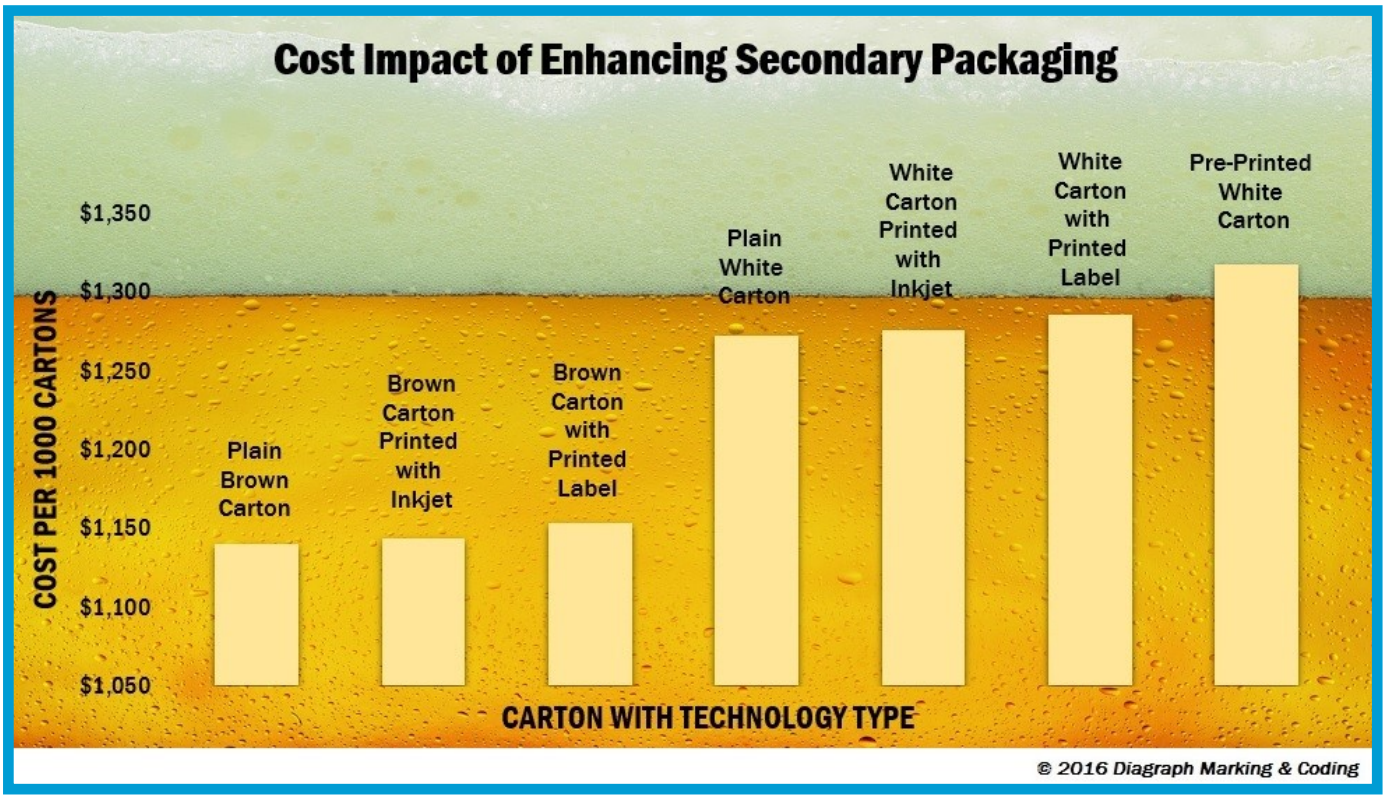
Laser	
PROS	**CONS**
Reduced Ongoing Costs– Does not use inks and solvents	**Higher Initial Cost** – Up front capital expense is greater for laser than CIJ
Maintenance – Less daily maintenance than CIJ	**Substrate Limitations** – Laser will not mark on all substrates
Permanence – Laser can produce a permanent mark on many substrates	**Safety** – Special guarding is typically required

SECONDARY PACKAGING CONSIDERATIONS

Standard corrugated or white boxes are the most typical secondary packaging options. Ink jet can be used to print readable barcodes, graphics and text directly onto a carton at about eight to ten times less cost than labels. Labels are more expensive but require less daily maintenance than ink jet and provide a nice white background for crisp printing contrast. To select the best technology for your brewery, consider the following points:

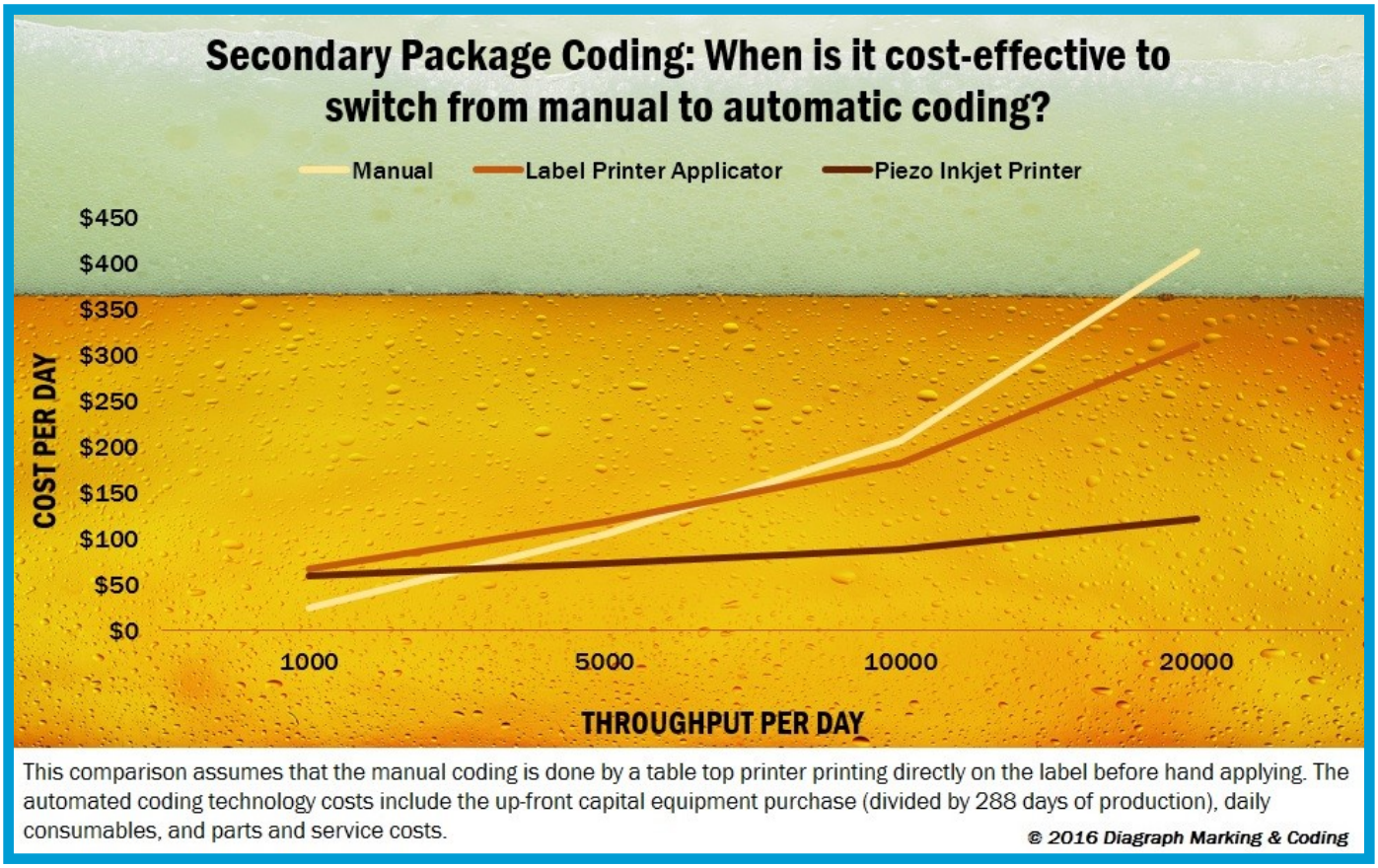
1. Package Type

The graph below illustrates the cost difference between plain brown cartons and white cartons printed with either ink jet or automated labels. Pre-printed cartons are also an option but given the significant storage space they require and the lack of flexibility they provide a growing brewery, they are not often a good long term solution.



2. Production Volume

The graph below compares the cost per day of manually applied labels, direct thermal label application and piezo ink jet printing for secondary packaging. At roughly 3,000 cases per day ink jet printing becomes more cost effective than manual label application. At roughly 6,000 cases per day direct thermal application of labels becomes more cost effective than manual label application (though still more costly than ink jet).



This comparison assumes that the manual coding is done by a table top printer printing directly on the label before hand applying. The automated coding technology costs include the up-front capital equipment purchase (divided by 288 days of production), daily consumables, and parts and service costs.

3. Features to Look for in Direct Thermal Automatic Labeler (LPA)

There are significant differences between pneumatic and electric LPA systems. Be sure to consider the following when selecting an LPA system:

A. *Reduced Chance for Damage*

Electric systems use up to 80% less force than traditional pneumatic technologies and are therefore less likely to tip or to damage packages. Look for systems where both the impact and continuous force measurements are between 2 and 3 kilograms and where "contact time" is no higher than 30 milliseconds.

B. Consistent Label Application

LPAs fail in situations where no label is applied, when the label is applied in the wrong location or when labels are applied out of sequence. To ensure these errors do not occur, look for systems that have sensors to detect label presence and location. In general, the way labels are applied via an electric LPA ensures 30% greater label transferability compared to pneumatic systems.

C. *Less Downtime and Simplified Maintenance*

Selecting an electric rather than pneumatic LPA eliminates the need for shop air reducing cost by as much as 50% and downtime by as much as 20%.

4. Features to Look for in Piezo Ink Jet Printer

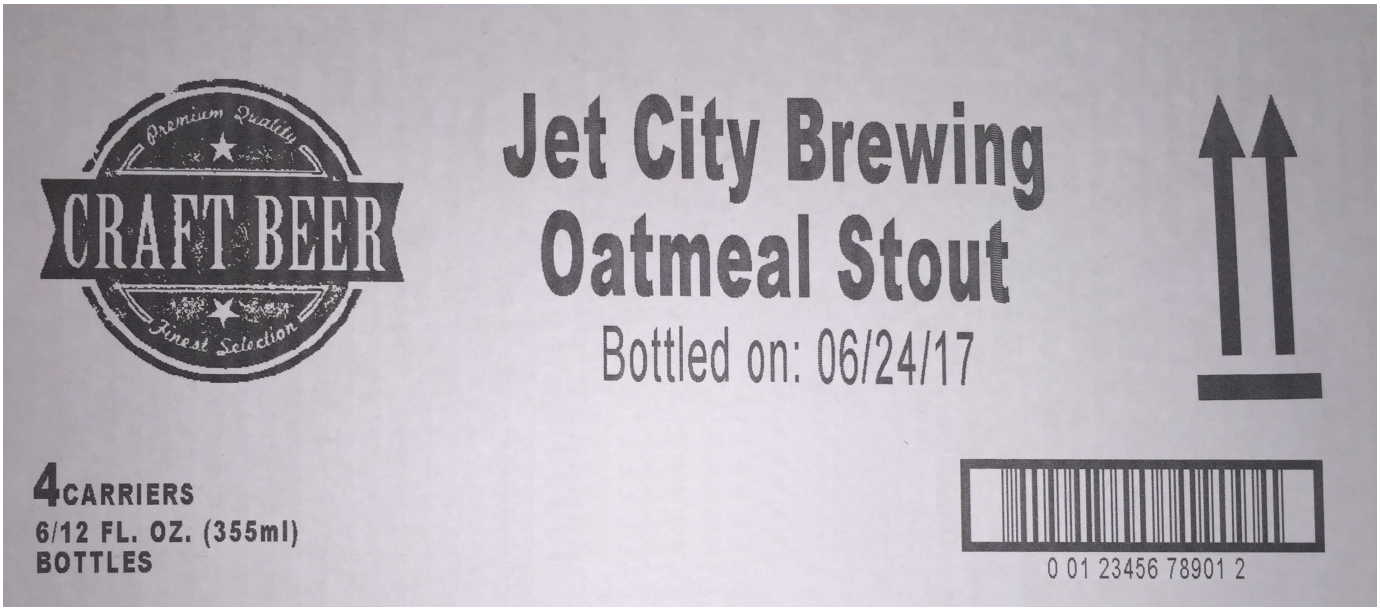
Ink jet is the most cost-effective option for secondary package coding. When comparing systems it is essential to consider:

A. *Low Maintenance & Durability*

Identify a system with stainless steel construction, shock-resistance, and automatic maintenance modules to maintain the quality of print automatically while minimizing the need for manual intervention. These features can allow a print head to work for as long as 10 years (compared to systems where the print head needs to be replaced every three months). Maintenance can be further simplified if the selected system has a single point ink supply that can drive multiple print heads. This greatly reduces downtime and simplifies the fluid refill process as it is not necessary to monitor and maintain individual ink supplies.

B. Ease of Use

Quality ink jet systems will allow for on-floor or in-office editing capabilities to simplify production updates. Operation can be done on a touch screen or personal PC. The later eliminates the need for a separate controller and generates cost savings.



SECONDARY PACKAGING CODING TECHNOLOGY COMPARISON

Direct Thermal Automatic Labeler	
PROS	**CONS**
Image– Sharp black on white image regardless of carton color or coating	**Application**– Material handling required to transfer label onto carton
Maintenance – No chemicals to handle and reduced daily maintenance	**Shop Air**– Expensive to install and use. Can be avoilded by selected electric labeler.

Piezo Inkjet	
PROS	**CONS**
Simplicity–Print directly onto carton. No label application.	**Carton Gloss** – Glossy coated carton requires fast drying , “non-porous” ink jet with increased reliability concerns compared to “porous” ink jet ink that dries through penetrating the carton fibers.
Print Quality Value – Ability to print fully scannable bar codes at low cost	**Carton Color**– Brown corrugated does not provide sharp contrast of black on white images
Cost– 8 to 10 times less expensive than labels	**Maintenance** – Increased daily maintenance compared to labels. Can be reduced through automatic maintenance modules.

It is an exciting time when a brewer gains traction with a carefully crafted product. Finding the right marking and coding supplier and paying attention to key performance characteristics for primary and secondary package printing technologies can smooth the transition to automated production and allow a craft brewer to keep their time and resources focused on the brew they are passionate about.

Questions about automated coding? We are honored to be your go-to resource for all things marking and coding. Contact us today to discuss the best options for your brewing operation.

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Diagraph.com

SPECIAL OFFER

Offer valid through 6/30/2016

TAKE BEER DATING TO THE NEXT LEVEL

One undeniable truth that sets the craft brewing industry apart from behemoth beer producers is that craft beer is by and large meant to be consumed fresh. In fact, the flavor profile of many craft beers is directly linked to age. Properly date coding your beer to communicate directly with your fans is quite possibly the single most important thing you can do to protect both your brand and your brand experience.

Date and batch coding have other peripheral benefits, including a traceability strategy to act quickly in the event of a quality or safety recall and increased transparency for retailer inventory management.

Taking your beer dating to the next level is made easy with our special offer CRAFTed just for craft brewers!

Everything you need to start date coding and batch coding directly onto bottles and cans — all for one great price!

What you get with the CIJ Starter Kit:

- Linx 8900 Printer
- Stainless Steel Printer Stand
- Printhead Bracket
- Photocell
- Fluids
- Installation and Training

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