

Reconsidering ink jet coding for secondary packaging:

Investigating piezo technology

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Less than a decade ago, if someone recommended you scrap your print-and-apply labeling operation for one of those new-fangled piezo ink jet coding systems, you understandably would be justified in offering him a raised eyebrow--or the door.

But what a difference a couple of years can make. Unlike their predecessors, some of today's piezo ink jet systems for secondary packaging operations offer unparalleled convenience, image clarity, efficiency, and work-hour savings. You'll discover that it's not only the opportunity to keep up with marketplace conditions, but to stay ahead, that compels serious investigation of this approach.

Decreasing downtime

At its most basic level, piezo ink jet technology involves making droplets of ink on-demand by causing a small chamber to rapidly expand and contract again. Sounds simple enough, right? Yes, but this simple process can enhance even the most complicated systems.

During the past five years, retailers have begun using bar codes in distribution operations, allowing them to more extensively automate these systems. Now, even more data can be printed on a label, such as an expiration date, with cost-slashing implications for effectively managing diminishing shelf life. Not only that, but a printed code can be used to tell another machine how to sort and where to deliver a product. Automation is enabled, thanks to the code.

It used to be that earlier generation ink jet codes weren't machine-readable because the printed image was seriously degraded by dust contamination of the printhead, which wasn't much of a concern because distribution wasn't mechanized. Even if some mechanization was used, there always was an employee available to perform a hand-scan. And do so repeatedly, if necessary, because 25% of codes weren't scanning because of poorly executed codes. The math is sobering, for example 90,000 individual cases output daily with a 25% failure rate. Frankly, at those volumes, even a 5% failure rate is unacceptable.

The availability of piezo ink jet systems with automated printhead cleaning systems makes that kind of failure rate a thing of the past. Efficient and reliable, piezo ink jet coding systems are the perfect complement to this brave, new world, with their ability to offer a five-to-10 times savings vs. the print-and-apply labeling process. Let's examine why.

With the previous generations of ink jet systems, employees needed to purge the printhead fairly frequently to remove dust and debris in order to keep them running at optimum print quality performance. This created several problems. Operators had to cease their other duties to clean the heads, a messy maintenance chore that also stopped the line. Plus, the purging process wasted lots of ink, not to mention the mess created as pools of ink dripped under these machines. It's a simple equation: downtime = bad. In fact, in some cases, the value of wasted ink made the system cost *ineffective*.

Some of the very latest piezo ink jet printers solve all that by automatically purging the heads before printing on each box (**see photos next page**). This can occur at rates of 30-40 boxes per minute. In addition, the system captures the purged ink, filters it back into the system, and reuses it. Not only that, but dust is cleared away from the heads. The result: no downtime, no manpower issues, and no mess.



PICTURES of corrugated print quality with automatic purging off (above) and on (below) show the visible difference. The number, 3999 or 5000, indicates the number of boxes printed until the particular box was removed from the test line.



Of course, any system suffers some limitations. Piezo ink jet coding is appropriate only for porous substrates and, as a result, cannot be used on secondary packaging such as shrink wrap. However, piezo can be incorporated into an operation that mixes the two approaches.

Paying extra for *nothing*?

Perhaps the strongest argument for switching from print-and-apply to piezo ink jet technology relates to a drawback inherent with labeling.

With print-and-apply labeling, you're paying not only for ink, but also for the white space needed to contrast against the printed image. In other words, print-and-apply labeling forces you to "pay for the portion that you don't print." Also, if a label is preprinted, basically you're paying for the label used in an inflexible system; for example, expiration dates can't be easily incorporated. In addition to a moderately expensive paper label, consider also the cost of the thermal transfer ribbon.

This results in a scenario in which the label is typically 70% of the final cost and the ribbon is 30%, with a \$.01 total per-label cost.

With ink jet technology, your on-going costs are only a fraction of that. Although the ink seems relatively expensive, it's used in only minute amounts. One liter of ink, a mere 34 ounces, yields roughly 100,000 printed boxes.

Then, there's the "D" word: downtime. A labeling system line incurs a few minutes downtime whenever the label or ribbon reel is replaced. That regular downtime has adverse implications for affecting other machinery on the line. With piezo ink jet coding, you can theoretically run forever, if not for a very long time. The machine never *has* to stop.

Assurance

To help ensure your new system is well-suited for your application and your customers, ask your ink jet supplier to provide you with evidence that your customers--big box stores

and others--will accept this approach. A common misperception is that they won't, due to bad experiences or lingering doubts from previous generations of ink jet coders. However, you'll find that most major retailers in the U.S. are comfortable using piezo ink jet printing if it delivers scannable bar codes.

To be on the safe side and to calm any fears, a coding-system supplier can supply a sample to a retailer to ensure compatibility before you commit to a new ink jet system. In addition, well-documented, qualitative studies exist on what retailers require. Of course, equipment trials also can prove immensely helpful in assessing real-world situations.

After completing these steps, you'll discover that today's secondary packaging "real world" makes a compelling case for self-cleaning piezo ink jet coding that can maximize your returns.

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