Pushing the Envelope:  
The Secret to Higher Inserting Productivity

by Carro Ford Weston
Combine the right envelope with high-speed inserting equipment to drive sustained productivity and reduce costs.

As companies look for every possible way to squeeze more performance from the mail-stream, the inserting process is getting more attention. Inserting represents critical, often revenue-generating workflow. As a result, the pressure is on to minimize stoppages, which impact productivity, cash flow and service level commitments. One of the primary factors behind stoppages is one that all too often passes under the process improvement radar—envelopes.

While print-to-mail operations routinely improve their processes by integrating ever more advanced mail and finishing technologies, the role of the envelope is often underestimated. If your critical inserting process is interrupted by frequent stoppages, chances are good you are not getting the maximum productivity from your high-speed inserting equipment. For some organizations, the secret to higher productivity lies in their choice of envelope.

For anyone concerned with improving print-to-mail productivity—whether you’re a production manager responsible for tight mailing schedules, a service bureau measured by SLA delivery or an IT manager tasked with sending out bills, policies, and statements—achieving the right outcome means selecting the most appropriate envelope for the production environment. The “right” envelope combines characteristics that ensure smooth, uninterrupted inserting. An envelope not designed for the rigors of high volume inserting can have a negative impact on SLAs, postage costs, reprints, cost of materials and more. On the flip side, using the ideal envelope can enable you to provide greater up-time performance, enhanced productivity and cost efficiency in your ADF.

About this White Paper

This white paper explores the trends and issues that affect high-speed inserting, the role that envelopes play in optimizing the inserting process, the consequences of using the “wrong” envelope, suggested solutions, what to look for in an envelope, and a profile of the ideal or “ultimate” envelope.
Market Drivers
The 21st Century Mailroom: Productivity = Profitability

Modern print-to-mail operations routinely churn out huge volumes of mission-critical customer communications. These documents range from bank statements and credit card bills to invoices and insurance forms, adding up to 45 billion outgoing first-class mail pieces sent out annually in the United States. It's estimated that some 20 percent of companies produce and mail these documents internally, while the remaining 80 percent outsource to specialized service bureaus.¹

When it comes to the state of the modern mailroom, productivity is the mantra of the day. And with good reason. By optimizing productivity, companies can maximize the return on their capital investments and drive more value to the bottom line, and this is critical. In the increasingly high-stakes world of high-volume mail, these outcomes can make or break profitability.

From Cost Center to Model of Efficiency

For years, internal mailrooms and production print centers were perceived as cost centers. However, that's all changing. Instead of a back-office cost of doing business, the mailroom is being viewed through a new lens, as an untapped opportunity for improvement that is transforming into a model of efficiency. And for savvy mailers, that transformation is being driven by a growing focus on improving uptime performance based on using the right materials—e.g. the envelope—for the application. By focusing on the productivity factors that affect high-speed inserting, you too can uncover rewarding opportunities for improving process efficiency and reducing costs.
High-Speed Inserting: Changing the Print-to-Mail Workflow

Many print-to-mail operations have succeeded in accelerating productivity in the pre-press and production print arenas. Now, more are recognizing the potential yet to be found in the inserting process. The high-speed systems available today have transformed the ability of mail operations to process and deliver work faster. They can make an internal operation more valuable and an outsourcer more competitive. High speed inserting is typically those applications that are run on inserting systems that cycle at speeds equal to or greater than 16,000 envelopes an hour.²

But here’s the bottom line. Whether you’re running an in-house mailroom or a competitive service bureau, reliability is mandatory. The bills and statements must go out, and they most go out every day. If they don’t, there will only be more to do tomorrow. What’s more, there is often a very real cost when the bills don’t get out on time—research shows that 68 percent of people pay their bills as soon as they receive them.³ This means the faster these revenue recovery tools reach their destinations, the better. And that means looking for new ways to weed out inefficiency and extract more productivity from the process.

The Missing Link in the Inserting Productivity Chain—the Envelope

As the flexibility of inserting systems has increased over the years, more and more applications can be processed at higher speeds. This flexibility includes increased filling thickness, and putting more into an envelope. The other consideration for high speed is the size of the jobs to be run.⁴

High-speed inserters are indeed amazing devices, but speed alone doesn’t guarantee consistent performance. Some organizations don’t recognize the critical importance of the envelope—or the impact it can have on the high speed inserting process. Some realize there are issues, but don’t know how to overcome them. Some know that the inserting process provides opportunities for improvement, but don’t know where. Still others assume that their existing processes provide adequate efficiencies. And most fail to realize that most envelopes are not designed for the rigors of high speed inserting.

“The role of the envelope is HUGE. Poor envelopes equate to poor performance, no matter how fast or sophisticated the inserter.”

J. Clint Daly, Vice President, Product Line Management, Pitney Bowes
Connecting the Dots Between Downtime, SLAs and Materials

When it comes to downtime in the high-volume mail business, production specialists understand the concept all too well. Inserting floor managers wrestle with it every day. These production professionals also understand service level agreements (SLAs)—they have to maintain a certain level of up-time performance to satisfy demanding performance commitments.

But when it comes to meeting SLAs and eliminating downtime, the disconnect occurs between downtime and envelopes. Even the most experienced production managers may not correlate the materials they’re using with the downtime they’re battling. When SLAs are not met, or when problems occur with the inserters or opening machines, the tendency is to blame the equipment. In actuality, the problem may not be with the inserters or openers at all, but with the type of envelope chosen to run on them.

What Purchasing Needs to Know

In many companies, the purchasing department is the gateway for envelopes coming into the enterprise. Unfortunately, most purchasing pros view the envelope as a commodity chosen within the framework of general office use. What the purchasing staff may not realize is that the envelopes required for a highly physical production operation are very different from the envelopes used in the office. The purchase is usually made based on price alone.

When it comes to the needs of the high-volume mailroom, purchasing departments may order envelopes to meet size or window specifications, but aren’t aware that they’re unintentionally neglecting quality criteria that impact uptime and ultimately, company profitability. Compounding the problem, they may be buying from several vendors or use reverse auctions that provide no way to track back on the quality of the envelope.

Failing to recognize the critical role that envelopes play in productivity, quality and cost competitiveness creates a number of difficult issues that affect the entire production operation. With a better understanding of envelope functionality, styles and the value equation (the price of the envelope vs. other costs like inserting downtime, SLA penalties, labor, mailing schedules, lost or delayed revenue, and postage), purchasing staff can make more informed decisions about materials. And they can make changes that translate to greater productivity and lower costs for mail piece manufacturing.
Key Issues: How Envelope Quality Impacts Productivity

Issue 1: Balancing the speed/productivity equation

When it comes to accelerating turnaround time, speed is a good thing. But as speed increases, the negative impact of stoppages and downtime is actually amplified. At higher cycling speeds, inserting systems are far more sensitive to variability in materials, and machine stoppages are far more costly in terms of lost throughput. For example, if a 12,000 cycle-per-hour inserter goes down for five minutes, it will have fewer documents to recover than an inserter that delivers 22,000 cycles per hour. It can take an average of 10 minutes to get an inserter up and running again, which further delays production schedules.5

Bottom line? The faster the inserting machine, the greater the peril of downtime. Four stoppages in one hour on a high-speed system can degrade productivity by 10 percent.6 Productivity on a slower machine decreases to a lesser extent. Clearly, faster cycling speeds alone don’t lead to better inserter performance. Conversely, higher cycle speeds without corresponding quality and integrity improvements can create a serious case of diminishing returns.

The Business Impact of Delays

The impact of downtime also varies by environment and application. Because transaction operations are responsible for mission-critical, revenue-capture documents like statements and invoices, they’re more at risk when envelopes are unable to stand up to the rigors of inserting. Direct mail operations may have SLA commitments of 97 or 98 percent, and can tolerate a few damaged mail pieces without penalty.

However, transaction operations serving finance, insurance, utility and other such markets have daily quotas and no room for downtime. Invoices and statements must go out 100 percent of the time all the time—and the business impact of billing delays caused by production problems can be extremely negative in these transactional environments. So it’s not just about the envelope; it’s about the enterprise.
Measuring Inserter Performance

With inserting, as with other manufacturing processes, quality production means incurring as little downtime as possible. So, what can you do to minimize stoppages on high-speed inserters? The first step is understanding that inserter performance is the result of two main factors—sustained speeds and mail piece quality. Many factors conspire to shortchange uptime over a shift, including variables like quality; bar codes; and the size and weight of inserts, paper, and envelopes. Other factors include operational awareness, materials and operator skill levels.

One of the most important factors affecting mail piece manufacturing is the quality of the envelopes passing through the inserting device. Envelopes are an extremely fluid component of inserting workflow and the piece most affected when something goes wrong. Therefore, analysis of inserting workflow must address the issues that affect envelope integrity and processability.

Issue 2: Downtime—A One-Two Punch to the Bottom Line

Downtime impacts production workflows in many ways, including where it hurts most—at the bottom line. When inserters go down, mail operations feel the most impact on two counts—costs mount due to lost machine time, and the risk to SLAs. Assessing the damage means understanding how to quantify the impact of downtime on the bottom line and the high costs it incurs across the board.

Quantifying Financial Impact via Cost per Mail Piece

The financial impact of inserter downtime can be measured in cost per mail piece (CPM)—the cumulative value of multiple performance-impacting factors such as labor, materials, workflow and average job size. The largest direct factor in CPM is postage, in addition to the cost of material and printing costs. Then there are operational costs of direct and indirect labor, maintenance, equipment depreciation, leases and the facility. This is all divided into the overall production or further by a job or machine level.

To take full advantage of high-speed systems, they should run as much as possible. Operations don’t want to waste time changing the systems over from job to job. The larger the runs, the better the CPM with less system idle time and more production. Clearly, the more mail pieces produced within a given time frame, the lower the costs. If you’re not producing as many pieces per hour as your target demands, you’re losing production time and negatively impacting costs.
The High Cost of Workflow Interruption

Workflow interruptions cause lost production time. This in turn generates costs associated with reallocation of resources, overtime, regeneration of work to run on another system, as well as service cost if the system is not under a maintenance contract. The degree of direct impact is dependent on the overall capacity at the site to run the particular application, the application itself, and how easy it is to move the work to another system and the timing of the downtime relative to the SLA deadline.

The High Cost of the Wrong Materials

Quantifying the financial impact of downtime also means examining material costs. In the case of high speed inserting, it’s a classic case of “you get what you pay for.” While your initial outlay for quality envelopes may be higher, you’ll experience fewer stoppages, lower downtime and more sustained performance. This point is extremely important. Of all the materials involved in the inserting process, the envelope is the most critical.

The High Cost of Reprints

Beyond the lost opportunities downtime creates, it’s important to consider the costs of time and labor for reprints, a persisting challenge for production managers. Once a mail piece is damaged, it must be reprinted. Even a perfect inserter can’t do much to cancel the hard dollar costs of a flawed mail piece. A mail piece that costs 25 cents to process on a machine costs $6 to $8 per piece when handled manually. Reprinting damaged pages entails a time-consuming, manual process where the operator must go to a terminal, enter the name of the record, print, and manually fold, insert and feed the status back to the computer. As reprints accrue, so do costs.
The High Cost of Neglecting Manufacturing Best Practices

Many print-to-mail operations have discovered the benefits of applying lean manufacturing techniques to the mail process in the form of an automated document factory (ADF). However, many in-house mailing managers may not come from traditional manufacturing backgrounds or have the resources necessary to take on this task. Nor can these high-volume internal mail operations be staffed or managed like other departments within the company. They require heavy equipment, forklifts and truckloads of materials that must be handled and stored—all essential components of a manufacturing model. Print-to-mail operations can struggle alone with issues that affect overall company profitability.

Outsourcers on the other hand are better resourced because mailing is their core business. They also know how to apply best practices from the manufacturing model to the production workflow—but outsourcing can be a costly alternative, and for some companies, a security issue. That makes it all the more important to understand and resolve productivity issues, especially those that are readily resolved by choosing the right envelope.

The High Cost of Lost Time, Lost Productivity and Lost Output

When it comes to producing mail pieces against strict deadlines, time is not a renewable resource. The need to extract every ounce of productivity from the process makes envelope quality a critical factor. If high-speed, high-end devices are to pay, they must run as much as possible within a given time frame.

To put the cost of lost time, productivity and output into perspective, consider that it takes about 10 minutes to load the average 5,000-piece job. Consider an older machine cycling at 5,000 pieces/hour, with a mean time between failures (MTBF) of 1,000 cycles. If the machine stops an average five times an hour, net production is 4,000 pieces an hour. When a high-speed inserter cycles at 20,000 pieces per hour, the negative impact of stoppages rockets. At the same rate of failure, the net production is 10,000 pieces an hour and an additional 60 minutes of production time.

Also, while machines are faster, operators’ productivity does not double in terms of their ability to respond to jams and problems. When a stoppage occurs, it takes an average of three minutes for the operator to clear a fault. If MTBF doesn’t increase, all the benefits of a faster machine are lost.
Issue 3: Materials (and Money) Down the Drain

In addition to lost time, productivity and output, stoppages and jams also result in material losses. Consider this scenario—in a given production environment, the envelopes used in the inserting devices were tacked and caused numerous stoppages of the inserting equipment. Therefore, to avoid material losses, it is as important to proactively work with vendors to make sure envelopes are packaged properly, as it is to choose the right envelope design, construction and quality.

Issue 4: Employee Morale and Productivity

Frequent stoppages don’t just impact SLAs, budgets and productivity. They also interrupt the rhythm of an operation and require more attention to resolve the problem and get workflow going again.

Then there is the intangible but equally damaging psychological impact—erratic work is frustrating—employees are more satisfied when they can work faster and produce more. When cartons of envelopes are damaged, operators have to do a lot of manual sorting, and the resulting mental fatigue sends productivity spiraling downward—operators really just want to be able to load materials without having to sort them. By using quality envelopes, operator productivity tends to improve tremendously.
Issue 5: Potential Problems for Payment Processing

The impact of the wrong envelope isn't limited to the products of outbound inserting. Farther along in the mail cycle, when reply envelopes are opened, quality can impact inbound mail to an equally serious degree.

Utilities, telecommunications, credit card companies, and other remittance sites receive thousands of business reply payment envelopes every day. Automated extraction equipment can open approximately 10,000 envelopes an hour on average, but when envelopes fall apart, it degrades throughput and erodes productivity. It also delays payment processing and revenue capture.

Extraction equipment requires good envelope construction to extract checks and payment coupons. Quality envelopes accelerate efficiency for opening and remittance processing equipment. Vendors of remittance equipment often state their preference for the use of envelopes with diagonal seam construction, because there are no side seams to catch the inner contents. As a result, the process can be fully automated as it was intended.

Typical two-side-seam envelope designs cause difficulties in opening and extracting contents because checks often get caught in the seams. This adds labor cost as well as maintenance expense because the presence of a technician is often required. Productivity languishes below rated speeds. When an envelope can't be processed by automated extractor, it has to be done in a semi-automatic or manual mode at a rate of 100 an hour. Costs are largely labor for manual handling, but processing delays also create a negative impact.

Taking Action: Implement a Quality Program

Ensuring the quality of materials used in the inserting process—specifically the envelope—can yield significant gains and put considerably more "up" in “uptime.” Therefore, to optimize inserting performance, managers should consider implementing a materials inspection and quality improvement process.

“...The inserter is highly dependent on the envelope to run efficiently and minimize stops. While envelope specifications for inserters are fairly broad, the key components for high speed inserting are envelope quality and consistency.”

Jim Walsh, Director, Technical Solutions Management, BÖWE BELL + HOWELL
Quality Partnering with Your Envelope Vendor

For just-in-time mail manufacturing to work, there must be a quality process in place. Many savvy mailers already do this. However, when a corporate purchasing department—typically the entry point into the organization for envelopes—orders office supplies, optimizing envelopes for high-speed inserting or opening/extracting typically are not primary considerations. It’s not neglect, but simply a need to understand what happens with the envelopes downstream.

Given this situation, it’s helpful to partner with an envelope vendor who can help implement a quality process. Then, if poor envelopes are received, the company and the vendor can work together to identify the root cause and resolve the problem. It is essential to choose a vendor who will support a quality process for the life of the operation.

Don’t forget about getting your inserter vendor involved as well. They can work at a local level with the envelope vendors at customer sites to discuss challenges and ideas to help systems run most efficiently. Since each customer has different expectations and requirements based on their applications using different inserters, it is best to work these items at the local level as “one size does not fit all”.

Implementing a Quality Program that Works

By implementing a quality program in cooperation with vendors, companies can eliminate most envelope-related problems. They can take steps to ensure that envelopes used are ergonomically suited for both the inserting system and the downstream opening/remittance equipment. What’s more, they can work together to establish and maintain a standard that maximizes productivity, quality and cost-effectiveness. For best results, this effort should encompass:

- Using a web-based paper envelope design to maximize efficiency and consistency at the inserter. Die-cut envelope production doesn’t achieve the consistency required due to its cutting process.
- Using high quality diagonal seam envelopes. Side seam envelopes tend to catch inserts, and seal gum adheres to the envelope itself, making opening difficult.
- Developing a process that ensures all paper, forms and envelopes conform to your specifications for your processing equipment.
- Inspection for damage caused by improper packaging, palletizing, handling, and/or staging—the main causes of damaged envelopes.
- Climatizing of materials before processing—emphasizing proper storage and adaptation.
Analyzing Root Causes of Downtime

Making a quality program successful means getting to the root causes of the problems that are actually causing stoppages and downtime. When it comes to high-speed inserting, root cause diagnostics remain more art than science. However there are ways to gain visibility into the process and gather data about what’s triggering downtime. You can survey the machine and collect data on a variety of metrics:

- The percentage of the shift that the operator must attend to the machine
- Operator time spent running the machine vs. getting materials or doing paperwork
- Actual production time vs. time stopped
- Mean time between failure—is it every 1,000 pieces or every 2,000 pieces? There is a big difference.

While a self-monitoring paper path can divert suspect envelopes or damaged mail pieces from the mail stream, the best defense is a strong offense—eliminating these situations altogether.

Cultivate a Manufacturing Mindset

One way to maintain quality and minimize disruption and downtime is to establish and maintain quality standards. This is a concept that manufacturing professionals have long understood and implemented. By extending the manufacturing mindset to the production of mail pieces, mail operations can leverage quality standards to improve uptime.

Dr. Edward Deming, a champion of quality in manufacturing, became a manufacturing icon by teaching management executives how to produce innovative quality products by weaving quality standards into manufacturing practices. One principle he advocated—“dock to stock” fixes quality problems at the source, and a partnership with vendors can achieve the same result.
Making Sure Paper Supplies are Properly Stored

Once a partnership is established with an envelope provider and quality standards are established and upheld, there is the matter of storage and handling—points where issues typically emerge. Ideally, all paper supplies should be stored in areas with temperature and humidity conditions identical to those in which they will be processed at high speeds. If this is not possible, it is important to give the materials time to acclimate or adapt to the processing environment. Envelopes and inserts generally require one week to climatize, while roll materials need two weeks.

The Solution: The Ultimate Envelope

The goals of increasing productivity and decreasing stoppages in the inserting process are well served by using newer and more well maintained equipment. But optimizing the efficiency and cost-effectiveness of the process—and other processes further downstream—depends largely on using an envelope designed for the rigors of the print-to-mail process. In other words, the ultimate envelope.

What is the ultimate envelope? It’s one designed to bring you ultimate productivity. Just as smart production operations consider user ergonomics for operators, the ultimate envelope incorporates ergonomic features to enhance inserter and opener productivity. It’s been specifically designed to run smoothly on high-speed equipment. Choosing the ideal envelope can make a dramatic difference in your production workflow.
The Ultimate Envelope: What to Look For

Choosing the right envelope, one engineered for the high-speed inserting process, is essential. There are several criteria to look for when choosing an envelope to improve inserter productivity and minimize costs. Some criteria affect the inserting device, while others have to do with how the envelope supports the marketing objectives of the mailing. When choosing an envelope for high speed inserting, look for a solution that meets these criteria:

1. **Extensive knowledge** -- The envelope vendor understands inserting and opening equipment specifications and can custom-design envelopes for high-speed processing.
2. **Dry-packed envelopes** -- Glued or tacked envelopes can have a negative impact on equipment performance.
3. **Diagonal seam construction** -- Diagonal seam construction is the optimal envelope design for inserting and extracting equipment. There are no side seams to catch insert or trap contents inside the envelope.
4. **Envelope uniformity and efficiency** -- Precision cutting of each envelope individually ensures uniform size over the entire order. Some manufacturers use an offline die-cutting process, which causes envelope size and construction inconsistencies. The slightest variation in tolerance can result in inserter downtime.
5. **Edge-tight gumming around window patch material** -- This prevents inserts from catching paper or the window patch during high speed inserting.
6. **Lighter weight design** -- This is important for mailers who pay by the ounce under First-Class USPS automated rate discounts. Based on mailing contents, you may save on added postage or be able to include an additional insert without exceeding a postal breakpoint.
7. **Proper adhesive placement in envelope construction** -- Poor gumming on side seams can create problems for an inserter. Avoid envelopes with rough edges or components that might catch or stick in the inserter.
8. **Time-seal gumming on the seal flap** -- This avoids adhesive migration (tacking in postal trays) after high speed inserting.
9. **Environmentally sound materials and manufacturing** -- Envelopes made from web paper generate less paper waste. Also, paper typically accounts for 40 to 60 percent of the total envelope cost.
Conclusion

Far from being a secondary element, the quality of envelopes used to high-speed inserting can make or break productivity goals. By paying attention to the quality of envelopes used on your inserter, you can make a huge difference in sustained productivity and lower costs for materials, labor, productivity and cost per mail piece.

To learn more about the ultimate envelope from MeadWestvaco, visit www.meadwestvaco.com or call 1-888-715-6641.
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1. William Hart, Chief Engineer, Lone Oak Technologies, a recognized expert in production mail technologies

2. Jim Walsh, Director, Technical Solutions Management, BÖWE BELL + HOWELL

3. Ibid.

4. Jim Walsh, BÖWE BELL + HOWELL

5. Clint Daly, Vice President, Product Line Management, Pitney Bowes

6. Ibid.

7. Karl Unger, Marketing Manager, MeadWestvaco

8. Jim Walsh, BÖWE BELL + HOWELL

9. Jim Walsh, BÖWE BELL + HOWELL

10. Shahzad Malick, Director, Asia Pacific Product Management and Marketing, Pitney Bowes


12. Shahzad Malick, Pitney Bowes

13. Jeff Geshay, Administrator of Partner Relationships, OPEX Corporation

14. Ibid.

15. Ibid.

16. Karl Unger, Marketing Manager, MeadWestvaco