

## How To Assess Today's Pharmaceutical Insert Feeders In Light Of Your Unique Packaging Requirements



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Feeding small folded inserts (leaflets, DFUs, etc.) should be the simplest step in today's complex pharmaceutical packaging line. Why then does this step so often result in more frustration, down time and validation hassle than any other? To efficiently process inserts, the correct design features must be "engineered in" to your feeder. This white paper describes a systematic approach that will enable you to 1) identify the right design features to address your application-specific feeding needs; 2) compare and contrast the capabilities of today's commercially available feeders and 3) evaluate which feeder best meets your requirements – ensuring a sound purchasing decision that improves the efficiency of your feeding process.

Typically the biggest impediment to increasing feeder efficiency is a mindset predicated on "the way it's been done before." With fresh eyes and an open mind, you can find technology that matches your most exacting requirements, ensures consistent and reliable throughput, and even consolidates verification and QC steps in the feeding process.

## Step I: Identify & prioritize your wish list of required features in a feeder

What would you like your feeder to do? And what design features would enable you to maximize the efficiency – and eliminate the familiar headaches – of your feeding process? Create your wish list, being careful not to limit it to familiar machine capabilities. Instead, consider a wide range of possible functions and features. Then prioritize your wish list based on your most critical requirements. The list below is a reasonable starting point for establishing your selection criteria. Make sure you support this first step with process review and improvement analysis to ensure optimal feeding efficiency. Draw on any available metrics which help identify specific reject/down-time assignable causes.

- Ability to feed folded pieces in any orientation – to prevent jamming, support scanning requirements, and ensure the correct orientation for follow-on packaging processes
- Elimination of gluing and tabbing – to reduce cost, rejects and barriers to consistent production (e.g., angel hair from glue, loose tabs connecting adjacent inserts in the stack, etc.)
- Suitability for use in-line, off-line or both
- In-line verification via bar code scanning, OCR, etc.
- In-line rejection of inserts when the bar code is incorrect or unreadable
- Automatic shut down when the feeder encounters an incorrect insert
- Ability to readily incorporate RFID technology
- Security measures to prevent the introduction of “bad” inserts after the scanning process
- Password protection of functions and resets
- Adequate cyclic speed capability – e.g., the need to feed 60 cycles per minute vs 60ppm when each piece must be fed during an 80 millisecond period, which translates into a 750 cycles per minute equivalent requirement

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More due to market familiarity than packaging efficiency, today's vacuum-based "pick and place" feeders remain a common OEM solution and a safe choice for production managers.

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- Ability to handle inserts of all sizes/dimensions (i.e., length, width and thickness)
- Required frequency of changeover
- Desired run time without operator intervention – e.g., at 200 packs per minute, an 8" stack of 1/16" thick inserts will only last 38 seconds
- Double detection to prevent a positively scanned insert from masking a faulty insert behind it
- Multilingual support for machine documentation, user interface and customer service
- Ability to feed larger folded inserts/sheet sizes to accommodate multilingual and regulatory data requirements
- Integration with cartoners, wrappers, labeling machines and other equipment to 1) ensure feeder accessibility and 2) consistently deliver the insert to the appropriate location
- Ability to feed multiple pieces (e.g. transdermal patches) per package
- Small footprint and flexible configurations to accommodate space restrictions
- Low maintenance to save time, reduce cost and minimize downtime

## Step 2: Compare & contrast the capabilities of today's insert feeder solutions

Now that you've established the criteria for your feeder, you're ready to evaluate all potential solutions in light of your needs. Avoid the temptation to focus exclusively on the machine(s) with which you are most familiar. Open your mind and consider all your options – including all four categories of insert feeders as described below.

### **Vacuum "pick and place" feeders**

More due to market familiarity than packaging efficiency, today's vacuum-based "pick and place" feeders remain a common OEM solution and a safe choice for production managers.

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Conventional friction feeders have achieved only moderate industry penetration. This is largely due to design shortcomings which reduce their flexibility and consistency during the set-up, feeding and changeover processes.

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**Pros**

- *Handle inserts with minor size or folding inconsistencies*
- *Eliminate the risk of delaminating inserts during feeding*
- *Able to fit multiple heads in very close proximity to each other*
- *Easy changeover from one size to another*

**Cons**

- *Once the piece is picked, it must be placed; it cannot be rejected in-line*
- *Often require tabbing or gluing of inserts*
- *Vacuum creates maintenance hassles and noise*
- *No way to control whether a second piece might fall from the magazine due to poor mechanical set-up or variation in the insert*
- *Difficult to integrate as an off-line process (e.g., to verify manual rework, support incoming QC, etc.)*

**Single step “fold and feed” machines**

Fold and feed machines offer a one-step solution for certain applications.

**Pros**

- *Reduce printing cost*
- *Eliminate the need for tabbing and gluing*

**Cons**

- *Lower consistency when faced with larger sheet sizes due to growing regulatory requirements*
- *Difficult to integrate as an off-line process (e.g., to verify manual rework, support incoming QC, etc.)*
- *Large size makes them difficult to mechanically fit into tight spaces*
- *Speed limitations*
- *Most complex changeover*

**Traditional friction feeders**

Conventional friction feeders have achieved only moderate industry penetration. This is largely due to design shortcomings which reduce their flexibility and consistency during the set-up, feeding and changeover processes.

**Pros**

- *Ensure the most efficient feeding process; insert is “staged” in the feeding position*
- *Provide an integrated or standalone off-line solution*
- *Safeguard the path that the insert travels between separation, inspection and dispensing to prevent the introduction of any “bad” inserts*

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These more advanced friction feeders eliminate most of the issues associated with their traditional counterparts – making them the best solution for many pharmaceutical feeding applications.

### **Cons**

- *Negative market perception due to a reputation for unreliability and inflexibility*
- *Lack the ability to fold as they feed*
- *Require near-perfect operating conditions and consistent product from print suppliers*
- *Unable to fit multiple heads in close proximity to each other*

### **Next-generation friction feeders**

Technology innovations have led to a new generation of friction feeders, including PHARMA-FEED from Fusion Concepts. These more advanced friction feeders eliminate most of the issues associated with their traditional counterparts – making them the best solution for many pharmaceutical feeding applications.

### **Pros**

- *Process inserts in any orientation – not just folded edge first – without gluing, tabbing or jamming*
- *Provide an integrated or stand-alone off-line solution*
- *Scan, inspect and reject in-line*
- *Gently feed and count even sensitive materials like blisters and foils*
- *Separate inserts before delivering them to the package*
- *Integrate “double detection” to ensure that a “matched” insert doesn’t mask a “bad” insert*
- *Safeguard the path that the insert travels between separation, inspection and dispensing to prevent the introduction of any “bad” inserts*
- *Easy access to the magazine/hopper for reloading*
- *Handle oversize sheets quickly and reliably*

### **Cons**

- *Don’t fold as they feed*

## **Step 3: Evaluate which feeder best meets your requirements**

Once you establish your requirements and understand the differences among the various types of feeders on the market, the selection process shifts to the final analysis phase involving the following steps:

1. Establish a matrix for mapping the capabilities of today’s feeders against your specific requirements in order to identify the feeder solution that best meets your needs. A downloadable version of this matrix is available at [www.pharma-feed.com](http://www.pharma-feed.com).
2. Require vendor demonstrations to confirm the capabilities of each feeder under consideration.

3. Pay attention to your “gut feeling” about the group presenting the machine. Do they use a conservative, cerebral approach that sets realistic expectations or do they take a free-wheeling sales approach? Do they request samples? Do they ask penetrating questions and challenge your assumptions to help you find the optimal solution?
4. Conduct an honest self-assessment. Is your company open to explore new solutions that can yield improved efficiencies – or does it tend to play it safe and settle for familiar solutions that deliver mediocre results? If the latter scenario represents your corporate culture, this systematic evaluation/selection process provides convincing evidence of your due diligence in recommending a better alternative solution.
5. Weigh the importance of each requirement you've identified, including price.
6. Review the maintenance requirements of each feeder under consideration – evaluating its wear items, potential failure points, downtime required, complexity of routine maintenance, and availability of ongoing support, parts, training, etc.

While this systematic approach to the feeder selection process may not yield the “perfect” solution, it will identify the optimal feeder to meet your packaging requirements. Even if you're not building a new line or retooling an existing one, this process is a valuable exercise in evaluating your current feeders. It enables you to review the advances in technology since the implementation of your existing machines – and learn whether you can achieve substantial increases in efficiency with relatively small capital outlays.

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