The Complete Guide to Automated Packaging
How to Streamline Packaging and Distribution with Right-Sized Packaging On Demand®

PACKSIZE®
The Complete Guide to Automated Packaging

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Chapter One

Packaging Automation

What is it?

Packaging automation is the process of packaging a product without human assistance. It can be integrated into an existing production line or stand alone, depending on packaging requirements. With e-commerce experiencing year-over-year double-digit growth, today’s approaches to secondary packaging are changing. Packaging automation is becoming a crucial investment to achieve efficiency, safety, and cost savings goals. As a result, most packaging facilities use some form of automation, ranging from individual simple process equipment that may form and seal cartons, to more advanced automated packaging lines that can scan, label, stack, and unitize entire pallets of goods. Whether the process is large or small, automated packaging systems provide smart workflows, reduce costs, and significantly increase throughput.

Throughout this e-book, you will learn what packaging automation is, why it is beneficial to your company, and how it can be implemented in your packaging environment.

Is it expensive?

Upfront costs associated with packaging equipment might make some companies wary of adopting automated solutions. However, once implemented, automated packaging can offer substantial savings and pay for itself in many areas.
**Is it scalable?**

Whether a facility is large or small, there are many options. Automated packaging equipment can be fully customized to any environment. Right-sized Packaging on Demand can be integrated into existing production lines, or stand alone. By integrating with existing processes and software, most packaging operations will benefit. An automated packaging system, designed by expert packaging professionals can deliver scalable performance and reliability needed for a highly efficient packaging environment.

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<table>
<thead>
<tr>
<th>Increased Customer Satisfaction</th>
<th>Right-sized boxes eliminate the need for excessive corrugated material and void fill, reduce product damage, and improve your customer’s overall experience and impression of your brand.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decreased Labor Costs</td>
<td>With the addition of automated packaging equipment, businesses can reduce and reallocate labor, improving overall profitability. The efficiency of On Demand Packaging® technology removes many of the most tedious and difficult tasks for warehouse employees.</td>
</tr>
<tr>
<td>Faster Output</td>
<td>Automated packaging streamlines operations with speed and reliability to handle the most complex demands. For example, the Packsize X7® automated system handles all the functions to make, pack, scan, label, and ship the right-sized box in just 3.5 seconds.</td>
</tr>
<tr>
<td><strong>Customers using Packsize On Demand Packaging systems report a 31% improvement in overall productivity and 20-30% faster output.</strong></td>
<td></td>
</tr>
<tr>
<td>Reduced Waste</td>
<td>On Demand Packaging solutions ensure a right-sized box is created for every order, every time. Right-sizing requires less corrugated fiberboard, removes or reduces the need for void filler, improves less-than-full-case cube utilization, and reduces the overall carbon footprint.</td>
</tr>
<tr>
<td>Optimized Warehouse Space</td>
<td>Right-sized Packaging On Demand® eliminates the need for a large box inventory, freeing up valuable warehouse space for other operations.</td>
</tr>
<tr>
<td>Reduced Corrugated and Shipping Costs</td>
<td>By minimizing box sizes, automated packaging substantially reduces dimensional charges and corrugated expenses.</td>
</tr>
</tbody>
</table>
Chapter Two

Do You Need Packaging Automation?

Labor, speed, and productivity issues require facilities to consider automation as a way to streamline their packaging processes and remain competitive. However, determining when it’s time to automate can also prove to be challenging.

Here are a few indications you may be ready to automate your packaging line:

**Increased Demand**
Do you anticipate growth in the markets you serve? Will you be adding new products in the coming year? If you are already struggling to meet demand and are projecting more growth, automation is a smart investment. An automated packaging system designed for your unique environment can maximize your entire workflow and potentially increase output by 20-30%.

**Shipping Multiple Products**
If you are shipping several different types of orders in varying shapes and sizes, this can take up large amounts of time on the warehouse floor. Automation drastically cuts labor spent on packaging products and timely changeovers. By designing right-sized boxes in any shape or size, an integrated packaging system reduces the number of packing stations, resulting in increased line efficiency and overall productivity.
Labor Issues
The labor force is often the first area to show signs of strain in a fast-paced warehouse environment. If you are experiencing increases in work-related injuries, difficulty in keeping up with demand, a high labor turnover rate, or find your labor force doubling in size during peak seasons, it’s time to review options in automation. Packaging automation can handle everyday demands and seasonal surges, while significantly reducing labor costs. Within months of implementing On Demand Packaging® systems, Packsize customers reported a significant savings in labor costs, and a 20-30% reduction in employee training. Through automation, a leading retailer and Packsize customer reduced its workforce by 11 full-time employees during the holiday season.

Too Much Waste
When manual labor is used in packaging lines, it’s hard to avoid excessive amounts of material waste. If your overall operation costs are being directly impacted by what you are paying to box, wrap, ship, and store, packaging automation can help. Right-sizing eliminates inefficient packaging methods by requiring less corrugated fiberboard, removing or reducing the need for void filler, and improving less-than-full-case cube utilization.

Customer Complaints
If your packaging line is consistently stretched to capacity, you may not be properly protecting your packages, which may lead to customer complaints. Nothing puts a damper on your customers’ experience quite like receiving a damaged product or the perception of a damaged product. Right-sized Packaging on Demand® can create right-sized packaging for every product shipped in seconds to protect your products from damage in transit.

An automation expert can assist you in taking a comprehensive look at the entire process flow of your packaging operation, from picking to shipping, so you can scale to the level of automation you require. The next chapter demonstrates how packaging automation can be customized to any environment, across a wide variety of industries, and can evolve as needs change. You may be surprised at the levels of efficiency and savings you can achieve by implementing automation into your packaging processes.

“We have never had a day that we didn’t get all the shipments out.”
- Chris Groseclose
Chief Fulfillment Officer, Crutchfield

Learn how Crutchfield reallocated their labor force and reduced their carbon footprint with the Packsize X5.
Packaging Line
Before Automation
- High labor demand
- High level of box management
- Poor use of warehouse space
- Manual packaging
- Packaging not right-sized
- Low throughput
- Lack of integration and data visibility
- All these inefficiencies equate to higher costs and lower sustainability

Packaging Line
After Automation
- Low labor demand
- No box management
- Efficient use of warehouse space
- Little to no manual packaging
- Packaging is right-sized
- High throughput
- Full integration and high data visibility
- Improved sustainability
- Higher profitability with reduced inefficiencies

Across all industries, companies are recognizing that it is now necessary to adopt new packaging optimization tools, materials, and handling technologies that will boost efficiency, productivity, and sustainability. Packsize On Demand Packaging machine systems are equipped for use across a wide variety of industries and can be integrated into your existing production line or stand alone, depending on your unique packaging requirements. Once you make the switch to automated packaging, you will notice the difference instantaneously.
Chapter Three
Scalability of Packaging Automation

Since no two fulfillment centers are exactly alike, varying levels of automation are available to streamline packaging operations and deliver on a range of complex demands. From basic “cut and crease” technology to more advanced packaging lines that scan, label, and unitize, there are many partial and full-automation options available that can be fully customized to any environment across a wide variety of industries.

No matter the industry, packaging processes typically involve data integration, product transport, product protection, carton creation, packing, sealing, marking, and sorting. All of these packaging features require varying levels of automation depending on the unique warehouse environment. Packaging automation from Packsize is a fully scalable solution, offering customizable processes that can evolve as needs change.

On Demand Packaging® Technology (ODP)

An On Demand System is designed to produce a right-sized box, on demand, on the packaging line. By replacing former store-and-retrieve, pre-made box inventories, and wasteful void filler, right-sized packages made on demand are dimensionally accurate, cost less to ship, and save resources. ODP technology offers manufacturers and e-commerce retailers increased speed, space efficiencies, and scalable automation options.
Advanced ODP

By integrating packaging-related accessories such as carton sealers, dimensioning systems, printers, scanners, strapping machines, conveyors, or gluers, Right-sized Packaging on Demand workflows can dramatically increase throughput in a box production environment. For example, a scanning table can create the required package dimension and input the dimensions into a packaging machine. With the weight also captured, the machine can then generate a shipping label. On Demand Packaging Systems can be configured to support various packaging process workflows.

Packsize provides fully customizable packaging equipment to make boxes at little or no capital cost in exchange for a commitment to purchase corrugated z-Fold material on a subscription basis. This model allows packaging operations to evolve as needs change.

The PackNet software platform enables On Demand Packaging technology to run single machines or orchestrate box production across multiple machines.
Integrated Automation

Facilities with a range of both conveyable and non-conveyable products may require the automation of multiple processes involving software integration among multiple machine systems. A comprehensive packaging software platform can optimize workflows by simplifying the complexities of many operators, thus increasing speed, and minimizing human error. For example, packaging software can provide a data collection method when no current system exists, and store product attributes in other functions. This is a cost-effective solution that can work along with existing warehouse management systems (WMS) or serve as an alternative, allowing a single operator to create right-sized boxes across several machines. The next chapter on software integration gives a more in-depth view of packaging software platforms.

With the dramatic increase in online shopping and the varied types and sizes of products available, today’s packaging demands are more complex than ever before. Due to the complexities of each unique warehouse environment, packaging automation is not a one-size-fits-all solution. Today’s order fulfillment and distribution centers require an entire packaging process that combines scalable systems built around process engineering, agility in automation, and proven integration that results in a streamlined operation with simplified tasks, reduced costs, and an improved customer experience.
Chapter Four
Software Integration

A reliable and customizable software platform combined with automated technology can achieve the scalable performance and reliability needed for a highly efficient packaging environment. Software integration creates intelligent automation, bringing people, processes, and systems together for long-term wins.

By managing the packaging process throughout the many layers of the order and packing process, packaging software facilitates a streamlined workflow with optimal packaging execution.

PackNet® software, by Packsize, can be integrated with an existing warehouse management system (WMS) to automatically control the packaging process from beginning to end.
Dimensioning

Software modules can be added to a packaging software platform to further increase functionality and performance. Along with PackNet, a dimensioning software module functions as a database to store basic product attributes like length, width, height, and the description of the product. Additionally, a cubing software module can expand the ability for multiple items to be packed into a single shipment. Weight can also be measured, stored, and used to produce shipping labels.

Packaging Execution

Production and optimization software that is fully integrated with packaging machine systems gives users the ability to reliably package and ship right-sized single- and multi-item orders, creating a completely efficient box-making experience. For more complex packaging requirements, Packsize box design experts can assist in quickly creating or altering designs to work with customer needs.

Warehouse Execution

At the beginning of the order and packing process, packaging software can work with an existing WMS to automatically pick the right packaging machine system (if using multiple), and calculate the best packaging for each shipment, taking the guesswork out of selecting a pre-made carton or envelope.
Workflow Systems & Interface Controls

By managing machine groups, packaging software can prioritize and give visibility to your packaging production. Orders are paired with the right box style, the correct corrugated, and at the right induction point.

PackNet enables Right-sized Packaging on Demand® technology to run single machines or orchestrate box production across multiple machines.

Intelligence

An accurate reporting module can analyze data collected from the software platform and provide detailed reporting to assist in making data-driven decisions about the packaging process. These reporting analytics provide raw data and analyses on a variety of report metrics and views, such as productivity.


Adding Software to Your Automation

Since levels of automation and process flows vary widely in each unique packaging environment, the software solution will also vary, requiring a platform that can be easily integrated and customized. One of our experienced automation experts can assist in analyzing workflows, product types, data, box designs, and equipment to customize a complete On Demand Packaging® solution for you.

As the only On Demand Packaging provider with a full spectrum of advanced and automated packaging systems, Packsize brings you the expertise to address any packaging environment and workflow.
Chapter Five

Automation versus Integration

Automated packaging, combined with precise technology and equipment, can produce increased productivity, quality, and safety on-site. But how do you determine the level of automation versus integration in your packaging process?

To design a custom packaging solution, it’s important to determine your packaging needs and enlist an automated packaging professional to help develop a streamlined process that meets your unique operational requirements. Utilizing automated processes in a packaging operation can greatly increase packaging efficiency through increased throughput. On Demand Packaging® systems deliver customized solutions that integrate with one or more of the following 10 features that occur in every packaging process.
10 Features of a Total Packaging Solution

**Data Integration**
When a purchase order generates work to be done, the data must be understood and translated for the rest of the process to work. An integrated software platform can be customized to provide this framework.

*The Packsize PackNet® software platform automatically calculates the best box style and packaging for each shipment with automated dimension capture and WMS integration.*

**Product Transport**
To efficiently transport a product from point A to point B in the packaging process, the product must be routed to be packed or sorted for shipping.

*With Right-sized Packaging on Demand® products can be transported by both conveyor and by cart.*

**Carton Production**
Creating right-sized boxes produces substantial savings in warehouse space, labor, and shipping. There are various automated packaging systems available to make a variety of right-sized designs.

*Three packaging systems are shown making custom box designs.*

**Product Protection**
By creating a right-sized box, products are not moving around inside the box, resulting in less damage during transit. Depending on product size, shape, and fragility, Packsize packaging experts can advise if additional product protection is required.

**Carton Erect**
Erecting a box can be performed by hand or by machine. Packsize offers a variety of systems to provide full or partial automation depending on each unique packaging environment.

*The Packsize X4® offers partial automation with human assistance, while the Packsize X5® and X7® automatically erects a box in seconds.*
Pack Carton
Placing targeted product(s) into a box can also be done automatically or manually, depending on labor requirements and packaging needs.

Carton Seal
A packed carton can be sealed with tape, staples, straps, glue, or shrink wrap.
Packsize offers a variety of accessories such as carton sealers, gluers, strapping machines, printers and scanners, designed to increase throughput and reduce labor.

ID / Marking
Most cartons need to be identified or marked with bar codes, labels, or print.

Sortation
Packages can be automatically sorted by purchase order, customer, or destination and placed on specific pallets or into assigned trucks.

Business Intelligence
Gathering accurate analytical data is important to review productivity and make future improvements.
PackNet® software provides the necessary level of business logic and framework to accomplish On Demand Packaging® functionality, such as the ability to prioritize box production, meet workflows, manage multiple machines, and create insightful reports.
**Automation / Integration Matrix**

This matrix demonstrates levels of automation versus integration in a warehouse environment.

<table>
<thead>
<tr>
<th>Automation</th>
<th>Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>

**Low Integration / Low Automation**

A warehouse with low integration and low automation essentially has stand-alone machines with work being done by a human operator who enters box sizes manually.

**Low Integration / High Automation**

A higher level of automation is achieved when a packaging machine receives required product dimensions from a scanning table, which then inputs the dimensions into the machine. With the weight also being measured, the machine can then generate a shipping label. Once the product is packed into the box by a person or automatically, it can be pushed down the line and automatically sealed and sorted into the right shipping lane.

**High Integration / Low Automation**

With high integration and low automation, the Enterprise Resource Planning (ERP) system generates an order, which sends data to the WMS that tells the machine to make a right-sized box. Essentially, high integration means the data flows into and out of the packaging area to create the work for operators to pack manually. Still, there are higher expectations of the person in the packaging area to pack, seal, and label a box.

**High Integration / High Automation**

High integration and high automation achieve the most efficiently streamlined process to pack products with the least amount of human assistance.

**How To Customize A Packaging Solution Just Right For You**

It’s clear that using automated machine systems can increase packing efficiency while cutting costs through both waste and damage reduction. But what’s the best approach in customizing a packaging solution for your warehouse environment?

Assessing your current packaging operation is critical in identifying where productivity issues may occur and assisting in determining needed process improvements. In the next chapter we will look at how each warehouse environment directly affects the approach to automation.
Chapter Six

How Does Your Warehouse Environment Dictate Your Approach?

One of the primary factors in determining your approach to packaging automation is to take a look at your existing warehouse environment. Packaging environments differ based on many variables such as the type of business, warehouse layout, and the number and sizes of products to be shipped. As examples, a manufacturing facility may produce products in batches, while an e-commerce fulfillment center may require shipments of single- and multi-item orders. Other facilities may require packaging of small or similar-sized items, while others may have large, heavy and/or odd-shaped products to ship. Each would benefit from automation, but each requires a different packaging model to achieve the best results.

Since packaging processes can be carried out in a number of different ways based on operational requirements, the best way to optimize your warehouse is to fully assess and understand your existing workflow. With the assistance of an Automated Packaging Professional, you can look at your packaging line holistically to design a customizable solution that matches your product flow, from shelves to shipping.
Although no two packaging environments are alike, every packaging process includes some form of data integration, product transport, carton production, product protection, carton erect, carton packing, sealing, marking, sortation, and business intelligence. On Demand Packaging® solutions can enhance processes and flow by integrating with one or more of these 10 features, depending on the workflow environment. The following examples illustrate different packaging environments and the benefits of a customized Packsize system in each.

**Automated Box Last**

“Box Last” is a highly-automated packaging flow designed for manufacturing or distribution facilities that need to pick and package single- or multi-item orders. While utilizing three Packsize machine systems and an integrated software platform, this packaging process produces a right-sized box-last, for the right product, in the right sequence, every time. All 10 features of the packaging process are integrated in this solution.

This process employs conveyance automation (and also works for non-conveyable or oversized items, from the picking of products). Each product is scanned for dimensional data and placed on warehouse racking. Sortation occurs at the scanner placed on the conveyor before the three shipping trucks.

- Customize your solution to match your product flow from shelves to shipping
- Right-sized box is produced last for the right product in the right sequence, every time
- Integration points across your facility will know where to route the order
- Packsize equipment will package products based on key attributes, cut times, and delivery methods

A large outdoor retailer has taken big steps to fine-tune packaging in its distribution centers by employing the Right-sized Packaging on Demand “box last” process, integrating several automated, small-footprint packaging machines to produce custom boxes for every order. Prior to utilizing this process, the company stocked an inventory of boxes, in varying sizes, at several pack stations, wasting time, money, and efficiency. Right-sized packaging lowered their dimensional charges, reduced the cost of materials and labor, all while increasing throughput.
Automated Box First

“Box First” is another highly-automated packaging solution that pairs boxes automatically with an order ready to be packed. Each product is scanned for dimensional data and placed on warehouse racking. Items are packed in the box as the box is conveyed through the warehouse racking. Sortation occurs at the scanner placed on the conveyor before the three shipping trucks.

- Customize your On Demand Packaging solution to enhance processes and flow
- Packsize equipment enables a right-sized box to be created and routed to the appropriate areas of your distribution center
- Boxes are automatically paired with an order ready to be packed
- Seamless communication built on the PackNet® software foundation enhances flow and provides order analytics

Leading audio and electronics retailer Crutchfield utilizes a box-first On Demand Packaging solution after realizing the need to increase automation to support higher throughput and reallocate labor. Prior to automating, the company had manual pack stations with five to eight packers handling up to 3,000 orders a day. This process was time-consuming and, without right-sizing, resulted in large amounts of wasted corrugated and void fill. Right-sized packaging provided the automation solution they needed, while reducing time, touch, and travel in their packaging and shipping process.

Automated Manufacturing / Assembly Environment

In a manufacturing environment, products may be produced in batches (the same item is produced for a certain production run), or by a purchase order, down to a single unit at a time. Products may be large, oddly-shaped, or heavy. This process illustrates a Packsize machine accommodating either production environment. Depending on the variation of products produced, packaging needs, takt time required, and other variables, On Demand Packaging solutions can be customized to improve throughput and reduce costs.

- For customers seeking higher automation for large, odd-shaped, and/or heavy products
- Integrates seamlessly into your existing assembly line
- Deliver the perfect fitting box to your packstation
- Automation helps to reduce labor and improve consistency in your packaging process

Forward-thinking furniture manufacturer Legacy Cabinets sought to reduce empty space and improve protection when shipping its cabinetry. However, the initial attempt at right-sizing required a substantially large box inventory. This required significant time, costs, and management of 500 box SKUs. Legacy Cabinet’s inventory now consists of only five different sizes of z-Fold™.
Multi-Machine Manufacturing Flow

This packaging solution features less automation and integration than the other manufacturing environment references. Products are transported to Packsize machines for custom box production then packed and shipped by an employee. This process can be integrated with packaging software to scan a product for dimensional data as it is unpackaged and placed on warehouse racking.

- Can be customized for any workflow
- Product dimensions are entered into the machine either with a barcode scan, manual scan, or your WMS
- z-Fold® will be fed into the machine and cut into a right-sized box
- Equipped for various box sizes and designs
- PackNet coordinates all elements of the manufacturing flow

For more than 20 years, Central Carolina Products relied on a traditional store-and-retrieve box inventory system to ship custom auto parts and other injection-molded products. Waiting for box vendor quotes and orders added several days to its lead time. After incorporating an On Demand Packaging solution, they can now create 100 custom boxes for 100 different parts at no extra cost and with no additional lead time.

Custom Batch Production

In batch production, an automated packaging machine creates batches of boxes, eliminating the need for a box inventory. In the illustration below, it is assumed that the production run is generated by an integrated software system, which means that this is higher on the integration scale, even though the packaging process flow is lower on the automation scale.

- Eliminate the dependency on box vendors for stock boxes and custom orders
- Quickly produce the exact number of boxes you need in the right size and design
- Optimized to produce any custom box for your operations—either in batch or single-piece flow productions

Packaging is typically the final part of any manufacturing or order fulfillment process, and often, the last to be optimized. The process solutions above emphasize the role a packaging line plays in achieving business objectives, increased throughput, reduced labor, and cost savings. Just as no two warehouse environments are alike, automation is not a one-size-fits-all remedy, but rather a customizable and flexible solution designed to streamline warehouse operations, increase sustainability, reduce costs, and increase customer satisfaction.
Chapter Seven

Benefits of Packaging Automation

To remain competitive in today’s ever-changing e-commerce market, getting more done with reduced time and costs is key to staying ahead. The expanded variety and overall volume of e-commerce products has led to new challenges in shipping and packaging, requiring supply chains to adopt automated packaging technology to boost overall efficiency, productivity, and sustainability. However, there are many moving parts involved in automation, and to many businesses, implementing an On Demand Packaging® solution may seem like too big of a capital investment. On top of the initial investment, integrating automation means changing the way your business operates, learning how to use new software, and training staff to follow new procedures. Is this all worth it?

Packaging Automation ROI

It’s difficult to make a solid decision on whether to implement packaging automation without an accurate idea of the return on investment. Fortunately, there are many benefits to Right-sized Packaging on Demand® that provide substantial operational improvements, resulting in significantly reduced costs and increased throughput.
Let's begin by looking at the hard ROI of automation, or the benefits to be found once you’ve implemented automated packaging technology.

<table>
<thead>
<tr>
<th>Benefits of Packaging Automation</th>
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<tbody>
<tr>
<td><strong>Decreased Labor Costs</strong></td>
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<tr>
<td><strong>Optimized Warehouse Space</strong></td>
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<tr>
<td><strong>Reduced Shipping &amp; Material Costs</strong></td>
</tr>
<tr>
<td><strong>Reduced Waste &amp; Increased Sustainability</strong></td>
</tr>
<tr>
<td><strong>Increased Order Throughput</strong></td>
</tr>
<tr>
<td><strong>Transportation Cost Savings</strong></td>
</tr>
<tr>
<td><strong>Meet legislation requirements</strong></td>
</tr>
</tbody>
</table>
Now let’s evaluate some of the soft ROI improvements that packaging automation provides. These may be more difficult to measure and quantify, but nonetheless, are important to achieving overall efficiency goals.

<table>
<thead>
<tr>
<th>Improved Employee Morale</th>
<th>An automated packaging line creates happier and more productive employees by taking away many of the tedious tasks involved with traditional pick-and-pull packaging and providing other, possibly more satisfying, roles in other needed areas.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved Customer Satisfaction &amp; Brand Experience</td>
<td>Customers are now demanding higher quality standards—packages that arrive on time, in good condition, and free from damage. More sustainable packaging materials and less waste are also important criteria that can determine a customer’s purchasing decision. Right-sized boxes reduce damages in transit and require less corrugated and filler material, resulting in a much happier customer experience.</td>
</tr>
</tbody>
</table>

So how much will you gain by investing in automation? Implementing packaging automation will save time, and therefore money, by making your workflows as efficient as possible. Substantial returns on investment can be achieved, and with the help of an automation expert, smart automation can be efficiently customized. Maybe the bigger question should be, what are you losing by not automating?

Packsize provides automated packaging equipment to make boxes at little or no capital cost in exchange for a commitment to buy corrugated z-Fold™ material on a subscription basis.
Chapter Eight
Sustainable Packaging Solutions

A Fundamental Factor in Achieving Sustainability

In recent years many well-known companies have undertaken corporate sustainability programs to decrease material waste and increase eco-friendly packaging. Walmart recently launched its Project Gigaton initiative, asking its suppliers to reduce greenhouse gas emissions by 1 gigaton from their supply chain by 2030. Hundreds of Walmart suppliers are now on board since the program’s introduction in 2017. Such initiatives are becoming more common, with reductions measured based on improvements in energy consumption and waste production and one of the most visible areas of sustainability: packaging.

Packsize offers a Sustainability Calculator to evaluate the cost savings and positive environmental impacts of switching to On Demand Packaging solutions.
Sustainability Perception

With the rise in e-commerce, supply chain professionals see the need to ramp up their efforts to become more environmentally responsible, especially when it comes to packaging.

Customers are demanding higher quality standards—packages that arrive on time, without damage, and with less packaging waste. According to a Packsize-sponsored survey conducted by the Peerless Research Group, logistics professionals highly prioritize improved packaging and shipping processes among the following areas of action to aid corporate sustainability:

<table>
<thead>
<tr>
<th>Profitability &amp; Customer Satisfaction</th>
<th>Of those survey respondents following sustainability practices, nearly eight in 10 noted that sustainability increases customer satisfaction, and 70% said it brings cost savings.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Chain Optimization</td>
<td>The vast majority of respondents (83%) plan to use process improvement strategies that can have sustainability-related benefits in areas like using less material, inventory, or lower logistics costs.</td>
</tr>
<tr>
<td>Environmental Responsibility</td>
<td>Those who viewed sustainability as key to their business success also listed recycling, reusing, and repurposing materials as important to their organization.</td>
</tr>
<tr>
<td>Improved Packaging &amp; Shipping Processes</td>
<td>The majority of survey respondents (81%) indicated the need to rapidly customize box sizes for their shipments</td>
</tr>
</tbody>
</table>

Value of Sustainability

Corporate sustainability programs can have a cost savings benefit, not just a “green” benefit. Packaging is a great place to start to reduce your overall carbon footprint.
Right-sized Packaging On Demand® produces innumerable sustainability-related benefits such as:

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eco-friendly Packaging with Reduced Waste</strong></td>
<td>Creating right-sized boxes uses less corrugated, reducing waste and minimizing the number of trees that enter the packaging process. By reducing the need for void fill, right-sized packaging saves on material costs and removes harmful and non-recyclable contaminants from landfills.</td>
</tr>
<tr>
<td><strong>Reduced Shipping Costs</strong></td>
<td>Right-sized boxes reduce weight and dimensional shipping charges, allow for more packages to fit on a pallet, and cut back the shipping carrier’s fuel needs, thereby reducing their overall footprint.</td>
</tr>
<tr>
<td><strong>More Warehouse Space</strong></td>
<td>Producing smaller boxes made of flat-stacked corrugated eliminates the need to buy and store pre-made boxes and double the SKU count. Since there is no longer a need to stock and manage a large number or variety of box sizes, warehouse space is optimized, opening up space for other value-driving activities.</td>
</tr>
<tr>
<td><strong>Reduced Corrugated &amp; Void Filler Materials</strong></td>
<td>For every 1 million square feet of corrugated cardboard used, On Demand Packaging systems typically reduce the average package size by 40%, require 26% less corrugated and 60% less void fill—resulting in a 25-ton global reduction of CO₂.</td>
</tr>
<tr>
<td><strong>Minimized Shipping Damages</strong></td>
<td>All too often, e-commerce packages arrive with some kind of damage, and replacing damaged products can be quite costly. With less filler material and room for product to shift during transit, a right-sized box significantly reduces the risk of damage, saving you money and assuring customer satisfaction.</td>
</tr>
<tr>
<td><strong>Improved Process Efficiencies &amp; Labor Reductions</strong></td>
<td>Through the ability to create a right-sized box for every product, Right-sized Packaging on Demand® achieves packaging sustainability. Results include more streamlined pack line efficiencies that requires less labor and improved order throughput.</td>
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</tbody>
</table>

To successfully reach sustainability goals, companies need to be able to tie cost savings to sustainability practices and highly integrate these initiatives into their supply chain operations. Conscientious eco-friendly packaging practices such as right-sizing, reusable and biodegradable packaging, and fewer packing materials effectively hit those targets.
Chapter Nine

Your Packaging Automation Future

The packaging industry has introduced automation as a way to address rising demand, an aging workforce, and difficulty recruiting and retaining skilled workers. A demand for greater speed and convenience in e-commerce has also contributed to the adoption of end-of-line automation that creates right-sized packaging on demand while minimizing packing material and maximizing product protection. Market forces are dictating a shift toward as much automation as possible.

Considering these trends, the need for further packaging innovations will be necessary to achieve higher efficiency, reduced costs, and sustainability. The next wave of productivity enhancements will come from information that can be accessed through integrated technologies.

The packaging industry offers varying levels of automation equipment to streamline packaging operations and deliver on a wide range of complex demands. As an industry leader in right-sized packaging, Packsize offers a full spectrum of On Demand Packaging® systems.

E-commerce is growing 30% year over year, and today’s business-to-business requires a comprehensive packaging process. One that combines scalable systems built around process engineering, agility in automation, and proven integration that can be quickly implemented into their fulfillment operations.
### Right-sized Packaging on Demand® Technologies

<table>
<thead>
<tr>
<th>In-line Packaging and Fulfillment</th>
<th>Full Automation</th>
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</thead>
<tbody>
<tr>
<td><strong>Advanced Automation</strong></td>
<td><img src="image" alt="Packsize X7®" /></td>
</tr>
<tr>
<td>The award-winning fully automated <strong>Packsize X7®</strong> gives you the most needed functions to make, pack, and ship a right-sized box in just seconds.</td>
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<tr>
<th>Erected Box System</th>
<th>Semi-automation</th>
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<tbody>
<tr>
<td><strong>Full Automation</strong></td>
<td><img src="image" alt="Packsize X5®" /></td>
</tr>
<tr>
<td>The World’s First Fully Automated Erected Box System.</td>
<td></td>
</tr>
<tr>
<td>The revolutionary <strong>Packsize X5®</strong> fully-automated, Right-sized Packaging on Demand® system produces ready-to-pack, right-sized erected boxes.</td>
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<tr>
<th>Automation</th>
<th>Ship-from-store</th>
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<tbody>
<tr>
<td><strong>Semi-automation</strong></td>
<td><img src="image" alt="Packsize X4®" /></td>
</tr>
<tr>
<td>For fast-paced, high-volume fulfillment centers, the Packsize X Series offers smart packaging automation with software technology integration.</td>
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<tr>
<td>The <strong>Packsize X4®</strong> cuts, creases, glues, and labels, all while producing a box every 12 seconds.</td>
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<tr>
<th>Some Automation</th>
<th>Non-conveyables</th>
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<tbody>
<tr>
<td><strong>Ship-from-store</strong></td>
<td><img src="image" alt="Packsize iQ3®" /></td>
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<tr>
<td>With its compact, portable design, the <strong>Packsize iQ3®</strong> provides a complete, sustainable solution to distribution, e-commerce, cell manufacturing, and businesses with space constraints.</td>
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<td><img src="image" alt="Packsize M1®" /></td>
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<tr>
<td>The <strong>Packsize M1®</strong> builds on the EM7 with an additional tool axis for faster box creation of tiled or complex box designs, with same-time printing directly on the box. This machine is for customers with large volumes and high box size variability with the least amount of trim waste. The M1 can be used across a wide variety of industries for heavy and/or large, odd-shaped products.</td>
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<td><strong>Non-conveyables</strong></td>
<td><img src="image" alt="Packsize EM7®" /></td>
</tr>
<tr>
<td>For warehouse environments that require complex, custom box-making, the <strong>Packsize EM7®</strong> manages single-piece, batch, and demanding corrugated production workflows, producing an unlimited number of FEFCO custom right-sized box styles and types. Functional for use across a wide variety of industries.</td>
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Talk to an Expert

Our dedicated team of packaging specialists and engineers will apply their industry knowledge and expertise to help you reduce your carbon footprint, increase efficiency, and improve your overall packaging process flow. Get in touch with us today to find out which Packsize solution is best for you.

Request an Evaluation.

Contact Us