

# PACKAGING PROGRESS

Presented by **TechNews**  
THE NAA MAGAZINE OF NEWSPAPER OPERATIONS

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Over the past few decades, the growing volume of preprints has overwhelmed traditional packaging and distribution operations. Complicating matters further, the number of part-run, or zoned, preprints continues to climb as the number of complete-run inserts declines. As these zones keep getting smaller to meet advertisers' demands, the work involved keeps getting bigger.

To date, technology has offered incremental productivity gains, though newspapers still wait for a "lights-out" mailroom capable of handling more preprints with more targeting more accurately—and with less manual labor.

## THE PRESENT

### Daily and Sunday Inserting

With Sunday preprint volumes continuing to grow, large newspapers often take different approaches to assembling daily and Sunday products. Many spend all week putting together the Sunday package.

### DAILY INSERTING

Manual Stackdown vs. Press-to-Pocket

While some papers send copies directly from the press conveyors to the inserter in a "press-to-pocket" configuration, press speeds and volume typically force mailrooms to send papers to stacks, where they are aligned into neat bundles and then carted to the inserter. As volume increases, papers can be diverted to overflow stacks and stored for later inserting.

### Advance Sections

SUNDAY INSERTING

Stacker and Strapper for Sunday Packages

Because of the sheer size of the Sunday package—many Sunday papers are more than 600 sheets—some large newspapers stack, strap and/or palletize advance-run sections before storing them for later inserting.

### Palletizer

Robots place tied bundles onto a pallet. Cardboard is placed between the layers of bundles, and the full pallet is then wrapped in plastic.

### Storage

Staffers using forklifts temporarily move the pallets into storage.

### Inserters

While faster and more accurate, modern inserters still need workers to feed each hopper.

### Counter Stacker and Strapper

Counted papers are sent to a stacker to be counted and aligned into neat bundles, which are then wrapped in the strapper.

### Automated Storage/Retrieval Systems

Robots capable of tracking different pallets of preprints can store and retrieve them from immense shelving units.

### Pallets, Carts and Bundles

Tied bundles can take different paths to loading docks. Papers to be transported to distribution centers are often placed onto pallets and wrapped in plastic, while others are transported by carts or conveyor-based bundle-distribution systems that deliver papers to different bags or loading areas.

### Counting, Stacking, Strapping and Palletizing

Completed papers and partially assembled sections are counted, bundled and stored or loaded for transportation to remote distribution centers for final assembly and delivery.

### Hand Assembly

The sheer size of bulky Sunday packages often forces newspapers to continue assembling newspaper sections by hand, either in-house (as pictured here) or in remote distribution centers (above right).

### Inserts

The bulk of insert material is still printed by outside commercial printers, then shipped to the newspaper.

### Distribution Centers

Many newspapers have built or leased networks of regional distribution centers, typically warehouse space where the final package is stored and assembled. Carriers then come to the distribution center to pick up the newspapers for delivery.

### Out in the Field

Some trucks drop off assembled packages at retail outlets such as grocery and convenience stores. Others bring newspapers to carriers, typically independent contractors who assemble the final package and deliver the papers to subscribers or retail outlets.

## THE FUTURE

### Multiple Printing and Distribution Sites

Unlike today's distribution centers, which are the last stop before final delivery, papers may begin building networks of highly automated and integrated printing and distribution centers close to key market areas, each with its own press and packaging equipment. The combination of multiple production sites and highly automated equipment could ultimately help make Sunday inserting more manageable and offer more refined targeting—right down to the doorstep.

### Other Remote Print/Distribution Centers

Newspaper Offices

Customization

Newspapers will tie together market research and mailroom systems, allowing the packaging and distribution center to produce more customized products.

### Digital Printing

With more publishers offering in-house commercial printing, newspapers will likely print more of their own inserts, someday using digital files from advertisers to print targeted inserts in sequential order as part of address-specific packages, for the multiple-site model to work, experts say a much higher percentage of preprints will be able to handle more inserting at live, press-run speeds.

### Press-to-Pocket

As inserting machinery speed—and more importantly, actual throughput—continues to improve, the distribution center will be able to handle more inserting at live, press-run speeds.

### Automated Overflow Buffering/Storage

Newspaper sections can be wound onto print rolls or similar buffering equipment, such as online storage coils or racks. In sequential order for temporary storage. These systems can serve as a dynamic buffer to the inserting equipment, or be disconnected from the press stream and later connected to the inserter.

### Containers

Rather than bundling sections, newspapers might store them in compact containers similar to the ones used by the U.S. Postal Service to eliminate the ripped and ruffled edges caused by straps. The unresolved challenge? Finding an automated way to bring the containers back.

### Automated Guided Vehicles

Instead of forklifts, AGVs like those found in many pressrooms will move containers and preprints around the plant.

### Hopper Loaders

Automated systems that feed preprints into the hoppers of inserting machinery represent the biggest and best opportunity to reduce the amount of manual labor needed for packaging.

### Storage

Insert/Collator/Inserter

Still the heart of the distribution center, future inserters will likely combine several specialized functions (see below). Shaftless technology allowing different hoppers to shift in and out of service without slowing throughput, already helps simplify zone changes. Eventually, newspapers might use a combination of inserting and collating to offer readers customized packages, such as a full stock-table section added only to the papers delivered to subscribers who request it.

### Collating

Collators place multiple pieces on top of each other. Later, they are wrapped in plastic or inserted into a jacket or folded section.

### Inserting

Today, the phase inserting is often used to describe collating, but some suppliers hope to build systems capable of placing thick sections and other bulky materials such as product samples and CD-ROMs on top of each other before wrapping the entire package in plastic.

### Plastic Wrap and Bar Codes

Newspapers will increasingly use containers or plastic wrap to combine individual newspapers or total-market coverage products with bulky product samples for address-specific delivery. Each package will be bar coded by ink jet printers to help track targeted products and prepare offers for direct mail.

### Multiple-Purpose Equipment

New equipment that handles stacking and strapping functions simultaneously will reduce the amount of floor space devoted to ancillary equipment.

### Arrivals and Departures Board

Similar to an airport, the loading dock will feature an automated arrivals and departures board to keep track of when trucks are due to arrive and what products they need.

### Integrated Production Systems

Computerized production-management systems will track and manage the entire process, from printing through assembly and distribution.

### Just-in-Time Inserts

Today's vast storage requirements will eventually shrink as advertisers and newspapers arrange to have preprints trucked to the newspaper closer to the delivery date. Some will arrive already loaded onto print wheels or other buffering devices.

### Satellite Tracking

Trucks and carriers will be tracked using the Global Positioning System, allowing improved communication. For instance, carriers could call in to track their products and be dispatched to deliver missed copies to subscribers.

### Alternate Products

Carriers and trucks will distribute multiple products, not just one newspaper. Already many carrier forces help deliver national publications, such as USA Today, The Wall Street Journal and Investor's Business Daily.

### Modern Delivery Fleets

Newspapers will use more specialized vehicles to deliver products, including highly efficient vans and trucks with multiple compartments to keep zoned products separate.

### Handheld Devices

Carriers will use wireless handheld devices that tell them what products to deliver, where and on what days. Single-copy managers will also be able to report and adjust draws in the field, in real time.

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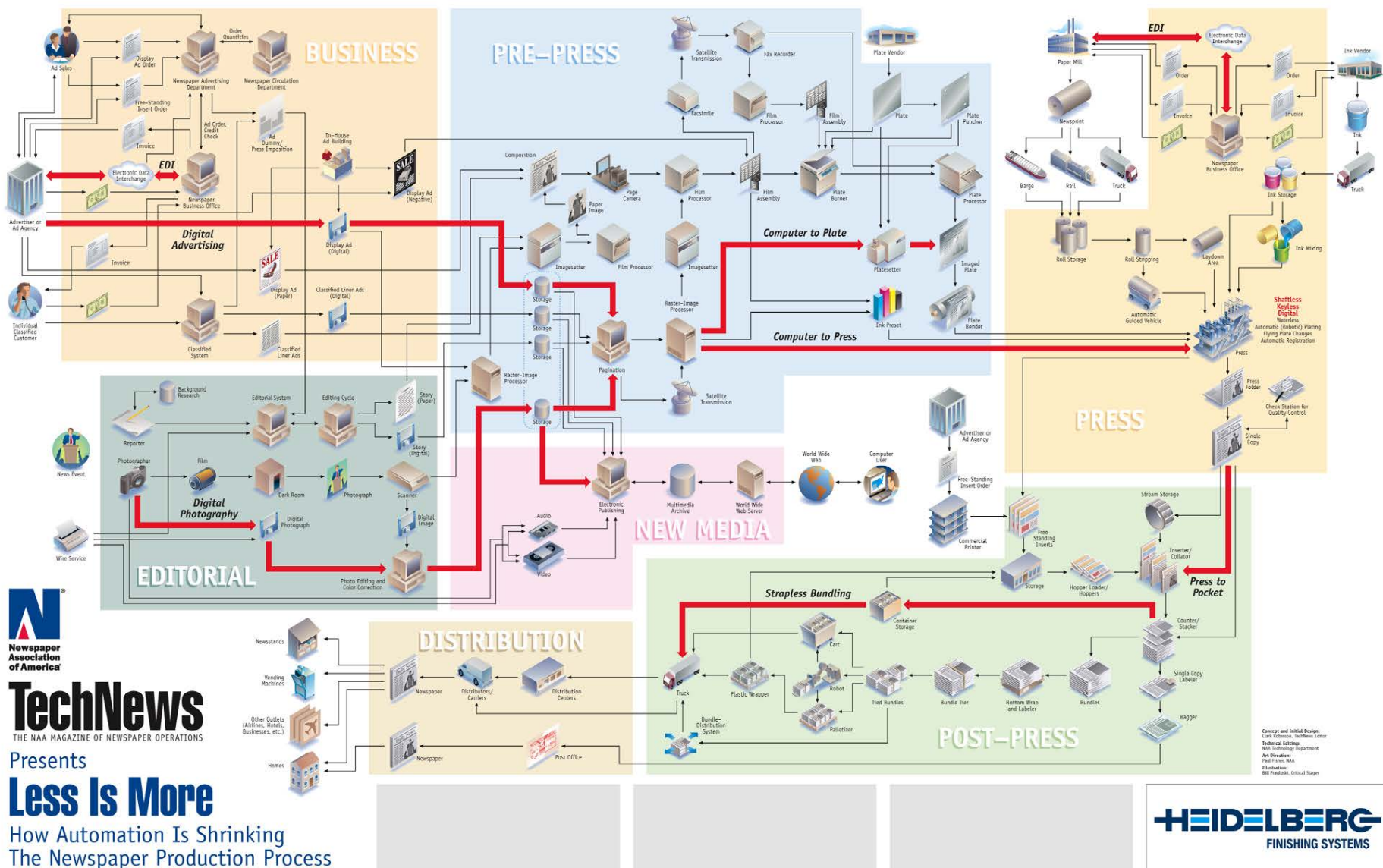
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THE NAA MAGAZINE OF NEWSPAPER OPERATIONS

Presents

## Less Is More

How Automation Is Shrinking  
The Newspaper Production Process

Red arrows (→) and red type indicate new, step-saving technologies



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FINISHING SYSTEMS

# MEET THE PRESS TECHNOLOGIES

## Printing Principles

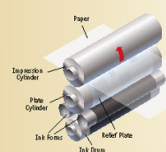
### Four-Color Printing

Newspaper presses use four colors—cyan, magenta, yellow and black (CMYK)—to print images. Pages are separated into C, M, Y and K plates, which are placed on their corresponding printing couples. (Green, for instance, is represented by dots on both the cyan and yellow plates.) As a continuous stream, or web, of newsprint passes through the printing couples, maintaining the alignment, or *register*, of each plate is critical for color reproduction. Three related technologies print today's newspapers:



## Printing Technologies

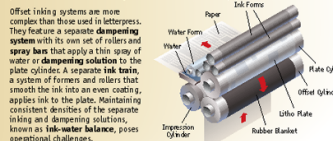
### Letterpress



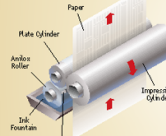
The oldest and simplest printing technology, **letterpress** uses relief printing—a process that, like a hard rubber stamp, prints off of raised characters. Rollers transfer a simple oil-based ink from the ink drum to the **plate cylinder**, where the raised portions of the plate transfer the ink to newsprint. Incessant color demands continue pushing newspapers to newer technologies.

### Offset Lithography

The underlying principle of **offset lithography** is the old cliché, "Oil and water don't mix." They can, however, form an emulsion that is separated later at the plate cylinder, while the image areas of the plate leave the oil-based ink, non-image areas are water-receptive and reject the ink. The image is transferred (offset) from the flat-surfaced, or **planographic**, plate to a rubberized **blanket cylinder** and then to the newspaper sheet.

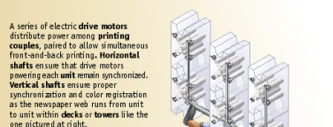


### Flexography



**Flexography** claims a small but significant group of newspaper devotees. A variation on letterpress, **flexo** uses flexible raised-image plates and special rapid-drying, water-based inks. A metal or ceramic **anilox** roller etched with thousands of tiny cells transfers precise amounts of ink to the plate.

## Press Drive System

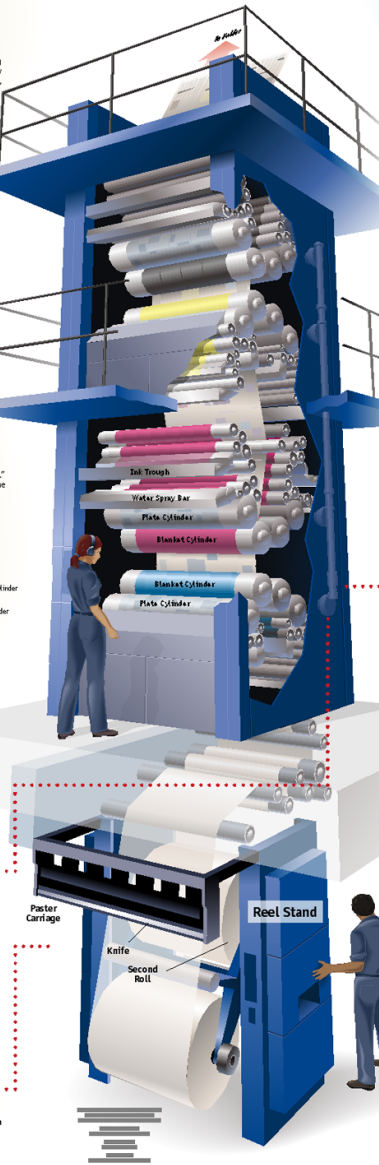


A series of electric drive motors distribute power among printing couples, paired to allow simultaneous front-and-back printing. **Horizontal shafts** ensure that drive motors powering each unit remain synchronized. **Vertical shafts** ensure proper synchronization and color registration as the newspaper web runs from unit to unit within **decks** or **towers** like the one pictured at right.

## Reel, Tension and Paster System

A complex system of machinery controls the flow of newsprint through the press. The process begins at the bottom of each unit, where rolls of newsprint are loaded onto an arm on the **reel stand**. When one roll is nearly depleted, the arm moves a second one into place, where it is taped and rotated at the same surface speed as the roll in use. Without stopping the press, the **paster** pushes the web against the taped end of the new roll and cuts, leaving the old roll. The entire system is known as reel, tension & paster, or **RTP**.

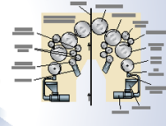
## Four-High Color Tower



## State-of-the-Art Technologies

First envisioned in the 1970s, **keyless systems** eliminate manual adjustments during press runs by using predetermined ink levels. **Passive, anilox-keyless** technology transfers set levels of ink through a longer but relatively traditional ink train featuring more precise **anilox rollers** and **doctor blades** to remove excess ink, while **positive-feed systems** use digital inkers to actively control ink flow and maintain consistent ink densities.

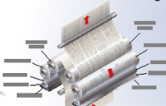
### Keyless Anilox Press



### Positive Feed Keyless Press



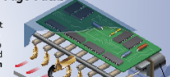
### Flexographic Press



**Flexography** offers a number of advantages to newspaper printers: It produces brightly colored, high-contrast images; its ink does not rub off, and it generates less newsprint waste than offset lithography. However, maintaining ink viscosity is critical, and **flexo** is relatively unforgiving of inaccurate press settings. Because of this, press operators must be highly skilled. Also, the soft flexo plates are expensive.

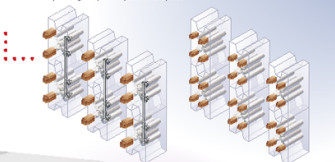
### Digital Page Packs

Used in both keyless and traditional offset printing, **page packs** use digital injectors to electronically control the flow of ink to the ink rail, ensuring more consistency and better color printing than offset's ink train of rollers and forms.



### Shaftless Press Drive System

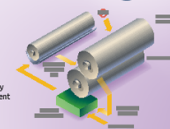
**Shaftless** technology uses very accurate electric motors to directly drive each couple or series of couples. Linked by high-speed cables, each motor is synchronized by computer, offers to a degree of precision impossible with mechanical shafts. Several variations exist: **distributed shaftless** systems retain vertical shafts for unit-to-unit registration, while **couple shaftless** systems eliminate all drive shafts. In the latter case, motors either drive in dual printing couples or pairs of couples.



## Future Technologies

### Single Fluid Lithography

**Single-fluid lithography** eliminates offset's dampening system, replacing it with an inking system that continuously adjusts the ink-water balance. A consistent ink/water emulsion layer separates only when transferred to the plate's image and non-image areas.



### Digital Presses

As envisioned today, digital printing remains fairly similar to conventional offset printing. The difference is the **imaging cylinder**, which replaces the traditional plate cylinder (and plates) and is directly imaged by the press.

Goss' digital **ADOPT** prototype deposits a copper-like metal into a water-attracting coating on the imaging cylinder; a laser then etches the image area. To allow *in-imaging*, the metal dissolves back into the printing solution.

MAN Roland's **DICOVER** employs a thermal transfer mechanism to image a water-accepting metal sleeve, which can literally be wiped clean by an automatic cloth-and-solvent system.

Another variation is **electography**, which sends electric signals through electricity-sensitive inks to make it coagulate on the image area.

