

Comparing TIJ and Print and Apply Labelers in Packaging



PRINT AND APPLY AND TIJ IN PACKAGING



Labels of all shapes and sizes are utilized heavily in the packaging industry for identifying and marking Kraft corrugate boxes or shrink-wrapped tray packs. Although capable of providing good quality coding solutions, they come at a price in terms of cost and degree of complexity. Today, many end users are turning away from this technology and replacing it with direct printing using Thermal Inkjet Technology from Norwix

AN OVERVIEW OF THE TECHNOLOGIES

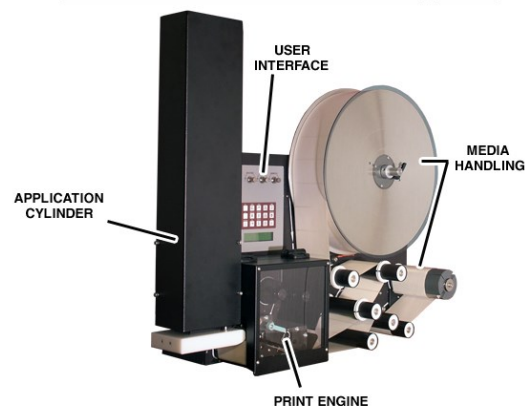
PRINT AND APPLY LABELERS

There are two technologies used primarily to print onto labels today:

- Direct Thermal which effectively burns an image onto a specially formulated, and therefore more expensive, label,
- Thermal Transfer which uses a ribbon coated with wax or resin, and melts the coating on the ribbon to apply it to the label beneath.

Once the label is printed it must be then affixed to the box by a variety of methods – roll on, blow on, tamp or wipe on. The differing methods support varying speeds, shape of the products and accuracy. However, they all require a backing substance from which the label is originally affixed and must be removed after use and disposed of.

Basic Elements of a Thermal Label Printer Applicator



Advantages

- Eliminate the expense and inconvenience of preprinted labels
- Good barcode scanning

Disadvantages

- High Maintenance
- Complex machine design
- High consumables cost
- Downtime issues when changing rolls

THERMAL INKJET (TIJ)

In TIJ the print cartridges contain a series of tiny chambers, each containing a heater. To eject a droplet from each chamber, a pulse of current is passed through the heating element causing a rapid vaporization of the ink in the chamber to form a bubble, which causes a large pressure increase, propelling a droplet of ink onto the substrate

Advantages

- High resolution Print Quality
- No Ink Mess
- Maximum Reliability
- Low Maintenance
- Easy to Maintain and use
- Prints on many substrates

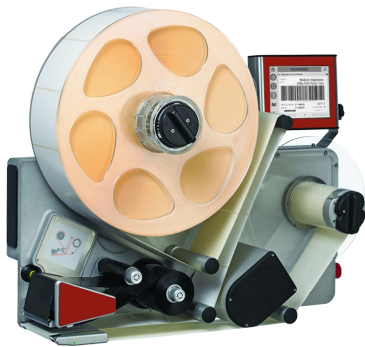
Disadvantages

- Throw distance
- Irregular substrates can be a concern



HOW THEY COMPARE

CAPITAL EQUIPMENT COSTS



Comparable Image Costs with TIJ

The majority of corrugate box marking is performed on two sides (opposite or adjacent) so as many as two or three labelers may be needed raising the cost of capital acquisition in the initial stages. This may be further complicated where different sized labels may need to be applied at different times, increasing again the number of machines required. Pricing can also change significantly depending on the print engine specified which will define the print technology employed and the resultant print resolution.

In many instances the capital costs will be similar between the two technologies. For example a Print and Apply labeler for applying labels to both sides of a box can cost upwards of \$20,000. A similar price for a TIJ based solution printing directly on to the box can be expected, although with significantly less complexity and maintenance.

- ✓ **TIJ:** Same Cost
- ✓ **Labeler:** Same Cost

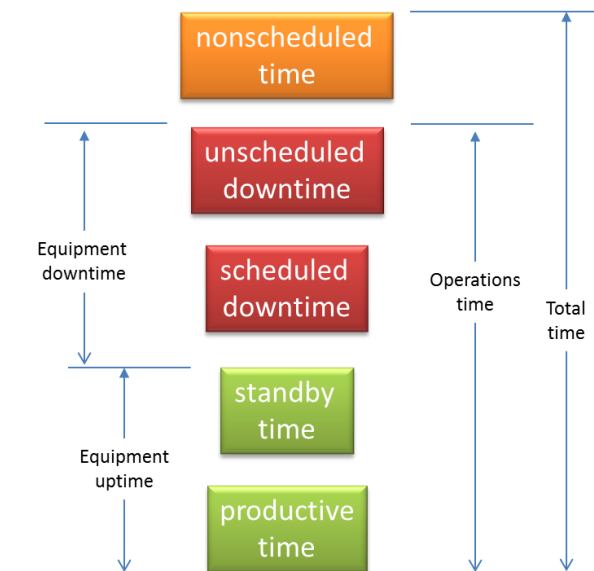
UPTIME AND DOWNTIME

Critical in all packaging environments, print and apply labelers suffer from downtime determined by the length of label rolls and ribbons in the case of thermal transfer. Usually labels are supplied in rolls of a maximum of 6000, although this will vary due to the length of the label. At the fastest speed this can mean changing the rolls every few hours. That can be a 30 second to a 5 minute process dependent on the labeler and the skill of the operator. This can cause the entire production line to stop causing significant and costly downtime. A five minute delay three times a shift can amount to over half a week's lost production over a year!

Unplanned downtime comes in the form of jammed labels in the machine which by their adhesive nature can gum up the entire process, adhering to rollers and conveyors alike. Anyone who has to fix this has always had a major job on their hand.

TIJ on the other hand has a very high uptime, as there are almost no moving parts and 'hot swapping' bulk ink bladders, for example is the norm ensuring that production continues on without a stoppage, a key element in efficiency.

✓ **TIJ:**
Labeler **Best Uptime**
Lower Uptime



Operational Productive time impacted by printers is measured in three parts – (1) unscheduled downtime, (2) scheduled downtime and (3) non-scheduled time

OPERATIONAL COSTS

Quite simply, Labels cost money. They are consumables that require constant purchasing.

Prices can be variable dependent upon the quantities purchased and size, but a standard costing per 1000 labels is given below based on medium to high level usage. With Thermal Transfer the ribbon will be used regardless of how much ink is transferred onto the label.

This is one of the areas where TIJ has a substantial benefit over comparable Labelers comparison tables are given below between the relevant technologies

Thermal Transfer

Label Size	Cost per 1000 labels/Prints				
	Ribbon	Label	Total	Norwix	Savings
1.5 x 1	\$0.40	\$1.03	\$1.43	\$0.46	\$0.97
2 x 4	\$0.50	\$4.02	\$4.52	\$1.45	\$3.07
4 x 6	\$3.20	\$8.62	\$11.82	\$7.12	\$4.70

Direct Thermal

Label Size	Cost per 1000 labels/Prints		
	Label	Norwix	Savings
1.5 x 1	\$1.74	\$0.46	\$1.28
2 x 4	\$6.53	\$1.45	\$5.08
4 x 6	\$15.91	\$7.12	\$8.79

A cost benefit of 2 to times improvement over Print and Apply Labels is seen with TIJ.

✓ **TIJ:**
Labeler **Low Cost**
High Cost

MAINTENANCE

Due to the complexity and number of moving parts in print and apply labelers there is a significant amount of maintenance that is required on an ongoing basis. This is multiplied by the application device as well as the thermal printer itself.

Part of any equipment operation has to be maintenance. How often this has to happen is a critical part of the total cost of ownership. Labelers require upkeep on an ongoing basis from cleaning to replacement of ribbons and labels to removing un-adhered labels off rollers and conveyors.

TIJ on the other hand requires almost no maintenance. Every time a cartridge is changed effectively the user gets a new printer and this is a 10 second process. Consequently the fees for maintenance can be classed as effectively zero.

✓ **TIJ:** **No Maintenance**
Labelers **High Maintenance**



THROUGHPUT AND SPEED

Labelers have a speed limitation, dependent in large extent to the method of application and the size of the label, with maximum line speeds of up to 200 feet per minute. In many case coding applications this may not be a limiter, however, for the newer production lines where throughput and efficiency is measured on line speed, this can be a concern in choosing the correct coding equipment.

TIJ offers throughputs beyond Print and Apply Labelers, achieving speed up to 500 feet per minute when required

✓ **TIJ:** **Faster**
CIJ **Fast**

TIJ IS A SOLID REPLACEMENT FOR LABELERS

TIJ solutions have come of age in the packaging industry. With a bulk ink handling system included as a basic part of an integrated head, core units are the most cost effective way of printing on cases and cartons. And with an ink designed specifically for printing on Kraft Corrugate and other carton materials available, total running costs are minimized at all times.



