Digital Printing *today*

2-2017

presented by Narrow WebTech

Redesign of the hybrid Panorama press 64

www.narrowwebtech.com

Direct Digital Print – Threat or opportunity for the label industry?

Dieter Finna

In the markets session of the FINAT European Label Forum 2017 in Berlin, Corey Reardon of AWA Alexander Watson Associates provided an overview of the current status of direct digital printing on packaging containers. The presentation was based on recently updated research and focused on identifying key drivers for growth of direct digital inkjet printing to containers. The presentation also contained an assessment of where direct digital printing could most likely replace more traditional methods of container decoration.

Corey Reardon began his presentation with shrink sleeve labelling as an example of how fast a new technology can develop, which when introduced, was considered costly, slow and too complex and therefore merely limited to niche or promotional applications. Today sleeving is one of the most mainstream technologies used in container decoration.

The AWA presentation showed the current status of direct digital inkjet technology and the effects on growth, expectations, penetration and the substitution of this technology on other label technologies. For an assessment of how direct printing technologies using digital inkjet will fit in the label market today, a clear-eyed look needs to be taken at the labelling technologies. There is pressure sensitive labelling, glue applied labelling, shrink sleeve labelling and in-mould labelling.

Global label demand by label format

Of the 59.5 billion sqm of label material produced in 2016, pressure-sensitive labelling accounts for 40% or 22.4 billion sqm, glue applied labelling represents 36%, sleeving 18% and in-mould labelling 2%. In order to compare apples with apples AWA further expanded on the range of pressure-sensitive labels. Pressure sensitive labelling comprises of two main categories: VIP labels (variable information printing) account for 45% and primary product labelling 44%. As a VIP label isn't a primary product label this percentage has to be subtracted from self-adhesive labels. Thus, the share of other labelling technologies increases.

Global primary product label market by format

As a result, the proportion of pressure-sensitive without VIP labels drops to 23%, shrink sleeves reach 23%, glue applied labelling represents 46% of the market and in-mould accounting for 2% of the primary product labelling market worldwide.

Corey Reardon stated in his outlook on the development possibilities of direct digital printing on containers, "this can and will compete with a label product in the near future". Direct inkjet will become increasingly established over the next five years in this segment and will prove that it is an alternative process to the growth potential of existing label formats. It will also prove to be an alternative to other direct printing methods for container decoration such as screen printing, thermo transfer printing and pad printing. "So, where digital direct print will ultimately stand, remains to be seen."

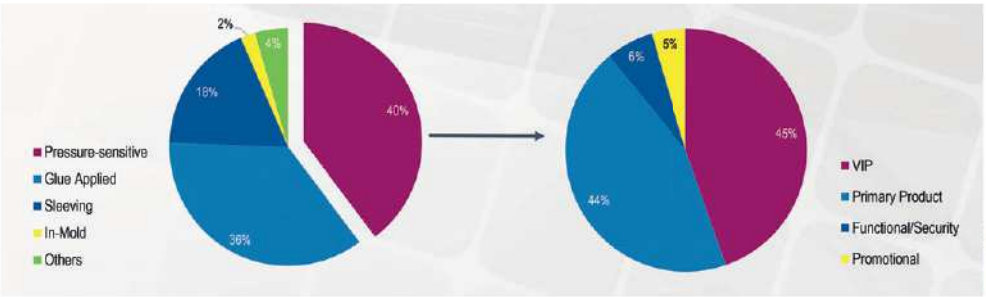
The current situation

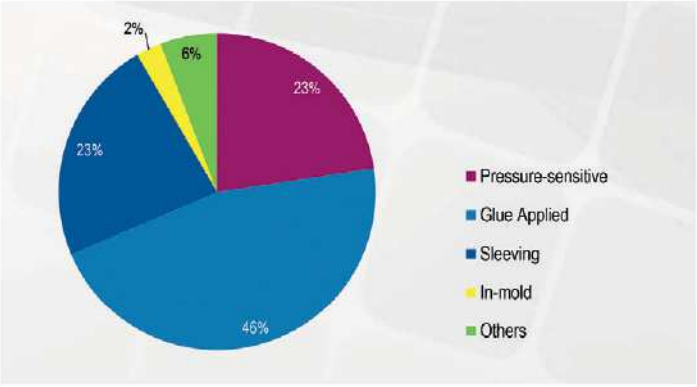
Over the last few years, the design of inkjet technologies has made tremendous progress in the development of printing heads, nozzles and inks. Inkjet printing systems have an enormous performance potential in this field of application, in terms of print speed and resolution. High quality graphics of 1080 dpi can be printed on containers. Added to this there are significant engineering advancements in automation technology, particularly in container handling and machine systems for labelling and filling. Even containers with a very complex shape can be printed.

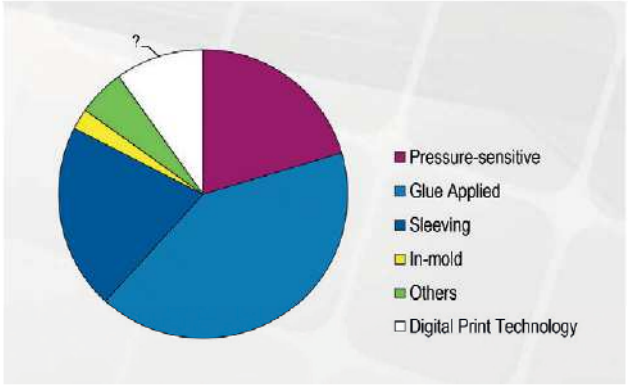
Product decoration of containers is faced with a continuously challenging demand for the cost reduction of the end products or the final packaging. This creates the need for new solutions in the field of product decoration such as direct digital printing technologies and is supported by today's focus on sustainability through reduction in the volume of packaging materials and the fact that printed containers can be recycled. There is one major advantage which offers a paradigm shift in production.

By being able to integrate print applications at the end of the container manufacturing, it challenges the current production processes. The industrial implementation is pushed primarily by companies that develop systems for very high throughputs in direct digital printing. In essence, these are companies such as Krones and KHS, but there will be more names of key players in the near future. Often they use Xaar TF print-heads. CMYK and white process inks are already qualified for low-migration

Global label demand by application. Pressure sensitive labelling with its sub categories VIP 45% and primary product labelling 44%







applications on a variety of plastic containers such as PET, HDPE and PP containers. The systems are equipped with print-head adjustment and automated print head cleaning.

Advantages and disadvantages

The digital printing process makes variable imaging possible and allows a high degree of customization up to the personalization of the product. Brand owners are noticing smaller order sizes, which are supplied on a demand-oriented basis. For branded goods, direct digital print offers a high degree of flexibility to produce of customized and flexible quantities.

The main advantage of direct digital printing is that it makes the label or sleeving process superfluous. This makes it an attractive alternative to conventional decoration technologies and saves the cost of labels or sleeves, including the stock of the material and the recycling of the release liner. All this makes it an interesting technology in a market which requires cost reductions and a fast reaction to changing market situations with reduced time to market. It is a technology that offers the flexibility of late stage customization and demand-driven production quantities.

In addition, the technology is suitable for rigid containers, also with special shapes. In digital printing, personalization and a variety of design variants can be implemented directly, and marketing is increasingly taking advantage of these opportunities. It offers the possibility of immediate application of image templates in printing, generally a faster time to market and a quick reaction to changing market conditions. The value chain

Left: Global label demand w/o VIP labels for comparison purposes

Right: How does direct digital inkjet fit into the hierarchy of existing label formats?

Source: Kronos/AWA

Samples for digitally printed bottles

Manufacturers of direct digital printing equipment

Dubuit: UV/LED inkjet and screen/inkjet hybrid systems
Hinterkopf: UV inkjet
Kammann: UV inkjet and screen/inkjet systems
Martinenghi: UV inkjet
Wifag-Polytype: UV inkjet and hybrid inkjet/dry-offset systems
Tonejet: heat-cured inkjet for metal cans

can thus be shortened and would then be independent of label and sleeve suppliers.

Disadvantages

But there are also disadvantages, or perhaps one could also say perceived disadvantages, as many of them will be overcome by new developments. Various issues appear in the field of inks, for example, the cost of inks is too high and the sources for inks are limited. This is certainly true today, but the situation will change.

There are several ink producers who have invested in the production of inkjet inks and cost of inks will be reduced by the volume increase of UV inks. Today there are still limitations on the printing of metallic inks, but the first solutions are starting to circulate in the market. The line speeds of conventional labelling technologies are higher and direct digital printing cannot compete with it. This is true for high speed labelling processes, for example when labelling beer. But compared to the line speeds of a typical health and beauty care line, direct digital printing can definitely keep pace.

From an environmental point of view, direct digital printing in the manufacturing process provides lower emissions, lower energy requirements and less waste. The environmental aspects include the recycling issue of printed containers, an important factor in assessing the recyclability of a container directly printed with UV inks.

What is the future?

The influence of digital direct printing on traditional label formats brings us back to the question of whether it is a disruptive technology. The AWA report does not imply that it will be disruptive but will certainly have an impact on other labelling formats. The highest likelihood of impact is in pressure sensitive and glue applied labelling, followed by shrink sleeves. The report offers details of which industry segments will be impacted in the short term and provides an indication of the extent to which the market for primary product labels will be affected in the next ten years. This can certainly only be an estimation in this early stage of the commercialisation of this technology.

Implementation depends on whether and to what extent brand owners will respond to the demand for personalization and customization requirements of consumers. If brand owners consider this as a must have marketing tool to meet customer requirements, this will accelerate the process of commercialising this technology. But it is also dependant on the technical advancements and new developments and therefore also linked to the question whether the costs for inkjet inks will decrease as a result of the increase in the number of suppliers? And also to what extent equipment manufacturers can succeed with their strategy of fully implementing direct digital printing and to what extent brand owners will invest in these technologies. All of this will only become apparent in the next two years, as this technology is still in the early stages of its commercialisation.

References

[1] Corey M. Reardon, AWA Alexander Watson Associates, "Direct Digital Print: threat or opportunity for the label industry?", FINAT European Label Forum 2017, Berlin/D