

Numerous macro trends in label and packaging printing require flexible machine systems

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An intuitive operating philosophy and automated presetting functions support the operator. (Photo: Gallus Ferd. Ruesch AG)



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Decisive for the efficiency of modern machine concepts in label and narrow web packaging printing are flexibility in configuration options, as well as the ability to change printing processes and jobs quickly. This is underscored by a look at the trend landscape within label and packaging printing. How does the Gallus Labelmaster assert itself as the most recent product development of the traditional Swiss manufacturer in a market that is increasingly demanding more flexibility? An occasion to take a closer look at the market trends and compare them with the features of the machine concept.

Many of the recently identified macro trends ^[1] in label and packaging printing have an impact on label and packaging product design – and thus on the demands that machines such as the Gallus Labelmaster must meet today. The following overview of current developments and trends gives a more detailed picture of these requirements.

Trends that increase job changes and reduce print runs

At the forefront of Macro Trends are changes in consumer behaviour as well as trends that can be attributed to fashion & design or retail development. For label and packaging printing, this is reflected in the increase in job changes and decreasing print runs.

- Today, packaging designers respond more specifically to the needs of consumer groups. They address baby boomers with a different design than younger consumer groups, increasing the number of packaging designs.
- The trend towards age-appropriate consumer design also increases the variety as labels or packaging are designed more clearly for the older audience, or larger typefaces are used.

- The »I want it now« trend is dominated by a group of buyers who are increasingly ordering on the Internet, some of whom are using their own labels and packaging for shipping.
- The fact that consumers are becoming increasingly aware and want to know what is contained in a package leads to more information and thus more text on a label or packaging. This is reinforced by the variety of languages and the mandatory information required for products requiring explanation, such as pharmaceuticals. These developments are creating a positive trend for booklet labels, but also to shorter print runs, as the information can quickly change.



Malibu has placed an NFC tag on selected bottles, which leads consumers to advertising content such as beverage recipes, a bar locator and the opportunity to win prizes. (Source: Mintel Global Packaging Trends 2019)

The Internet of Things (IoT) is especially important for the macro trend technology.

- Labels and packaging are increasingly being equipped with QR codes or NFC tags (near field communication tags). Via the Internet, buyers can view more information or interactive options on their smartphones. This allows the brand owner to differentiate itself from its competition on the store shelf and create a direct link to the buyer. This also includes an enhanced product experience through augmented reality.
- At the same time, we live in a world of networking where changes in the design of labels and packaging are much faster. This results in a wide range of variants and smaller lot sizes, combined with an increasing number of order changes.

Trends that affect the machine configuration and the change of the printing units

The current trend in consumer behaviour towards simplicity in design does not necessarily mean that this also represents less effort in the requirements of the printing technology.

- On the contrary: To realize a rather simple design attractively, often means more effort in printing. High opacity due to screen-printed white, the use of matt and gloss coatings or haptic effects due to thick-layered screen printing are just such examples. And not to forget finishing with hot foil and cold foil: All screen printing units and hot foil units for such jobs must be able to be placed where the respective job demands it with little effort.
- Contrary to the simple design, higher quality consumer goods continue the trend of highlighting a brand with an exclusive design, resulting in at least the same – if not even higher – process variability requirements.



In the Gallus Labelmaster Advanced, all flexographic printing units can be exchanged by either screen printing, hot foil or die-cutting units. Additionally it is also possible to replace them with units from OEM manufacturers.
 (Graphics: Gallus Ferd. Ruesch AG)

Flexible configuration options

What technical characteristics do modern machine systems need today in order to meet these market requirements? The Gallus Labelmaster belongs to a machine class that offers a balanced degree of automation with high profitability for the operator. With its modular structure, it offers a multitude of configuration options and is therefore very much in line with market requirements: The Gallus Labelmaster Advanced is designed so that all process changes in the printing section occur at a level known as the primary process level. As a result, all flexographic printing units can be replaced by screen printing units, hot foil units as well as punching units. It is also possible to replace them with units from OEM manufacturers. A process change, i.e. changing one printing unit to another, requires less than 15 minutes for this equipment variant to »ready-to-print«. This makes the machine system flexibly configurable for every job requirement. The Gallus Labelmaster Advanced does not have to be switched off during the process change, the process change takes place while the machine is running, which brings a time and therefore monetary benefit. Since all units are located on the same leading axis, this also offers control-related advantages over machine systems in which the screen printing unit is located on a rail above the flexographic printing units or added as drop-in station.

Following macro trends, process changes will continue to increase and short process changes will be even more important for the efficiency of a machine system in the future.

Although these machines also offer a certain degree of flexibility in principle, there are significant losses in changeover times, pressure stability and thus ultimately in the productivity of the machine solution. Process changes require considerably longer for such solutions, with rail systems a total of approx. 30 min (+ 100%), with drop-in variants even up to 45 min (+ 200%). If one assumes in practice approximately 2 process changes per shift, then this different time requirement for the process changes is expressed in annual savings of EUR 38.400/year in 2-shift operation compared to a rail

system, or EUR 76.800/year compared to a drop in variant. Following macro trends, process changes will continue to increase and the shortest possible process changes will be even more important for the efficiency of a machine system in the future.

Changeability of the Gallus Labelmaster

The basic version of the Gallus Labelmaster also offers the option of two interchangeable processes within the printing units, for example a screen printing unit and a hot foil stamping instead of two flexo units. Again, the change in any position of the machine is possible. Machines that were configured as a pure flexographic printing line at the time of purchase can be retrofitted with the option of changing two units, for example with a punch or screen printing unit. In this way, a customer can also use the machine for other applications / products and has investment security for a changing product portfolio. If one draws a cost comparison for process changes with machine systems of other types, this results in an annual saving of EUR 12,800/year compared to a rail system, or EUR 51,200/year compared to a drop-in variant.

The savings potential for process changes with the Gallus Labelmaster Advanced compared to machines with rail systems or drop-in units is considerable.



Exceptionally short set-up times and superfast job changes due to the gearless lightweight printing cylinders. (Photo: Gallus Ferd. Rüsch AG)

Trends to ensure the least possible waste of paper are gaining in importance

Today's machine systems have yet to meet other trends. One of these trends is the sustainability of packaging, which will attract much more attention in the future.

- As packaging waste becomes increasingly critical, both label and packaging printers will have to look more thoroughly at the issue of how to minimize the amount of waste in setting up orders – and this with an overall increase in the number of order changes.
- In addition, alternatives to plastic materials are gaining in importance, resulting in an increase in the range of substrates. One recent example is grass paper. When purchasing a machine, the ability to print on a wide range of materials – from monofilm to tube laminates – is a factor that should be considered.

Demand for a machine concept with low volume of paper wastage

Following these trends, the question arises as to how a machine concept must be designed that meets the requirements of ecology and sustainability. Low paper wastage is a weighty criterion not only for reasons of *sustainability*, but also for potential savings. In this case for the Gallus Labelmaster, the web travel from printing unit to printing unit is 1.4 m. This is made possible by the arrangement of all essential processes on the primary level, whereby no change to another level is necessary. The use of a screen printing unit on a rail, for example, causes an additional path of 4 to 6 meters. The arrangement of the printing units on the primary level, however, saves material, time and costs during setup and becomes even more important with increasing job and material changes.

Savings of the Gallus Labelmaster Advanced	Process Change	Hourly Rate	Savings one shift per day*	Savings two-shift per day*
	[min]	[EUR/h]	[EUR/Jahr]	[EUR/Jahr]
Labelmaster Advanced	15	160	versus -	versus -
Rail system	30	160	-19.200	-38.400
Drop in	45	160	-38.400	-76.800

* 2 process changes per shift, 20 working days / month, hourly rate 160 EUR / h

Savings of the Gallus Labelmaster	Process Change	Hourly Rate	Savings one shift per day*	Savings two-shift per day*
	[min]	[EUR/h]	[EUR/Jahr]	[EUR/Jahr]
Labelmaster	25	160	versus -	versus -
Rail system	30	160	-6.400	-12.800
Drop in	45	160	-25.600	-51.200

* 2 process changes per shift, 20 working days / month, hourly rate 160 EUR / h

User-friendly features: »Easy-to-Use«

For fast process and job changes, the user-friendly features of a printing press are crucial. This includes the entirety of the »easy-to-use« properties. For example, that during the process change on the primary process level no chain hoist is needed. Or stable printing units in which printing cylinders and anilox rollers are equipped with bearer rings. They ensure consistent print quality by eliminating the formation of gear marks that always occur over time with gear-driven printing cylinders.

Process Levels of the Gallus Labelmaster

Secondary Process Level:

It consists of a rail system above the primary level, for installing processes like cold-foil, lamination or the web-turn mechanism

Primary Process Level:

Here all flexo and screen printing or hot foil embossing and die-cutting as well as the web pretreatment are arranged.

Tertiary Process Level:

Below the printing units optional implementation of the varnish flow path and/or web-edge control system

The lightweight printing cylinders of the Gallus Labelmaster can be changed in no time at all. A machine with eight printing units requires less than 8 minutes to change, even less when two people are performing the change at the same time. For this purpose, a special clamping system has been developed to accommodate the cylinders. Also of advantage is the practical and ergonomic arrangement of the operating buttons, which, from experience, are installed where the operator expects them.

For maintenance, the printing units can be easily removed so that no machine failure occurs during such operations. When integrating screen printing units, it proves to be an advantage that they are designed and manufactured by Gallus itself and that a separate model is used for each machine type, which is integrated in the control system. Also noteworthy is the design of the chambered doctor blade, with robust ink chambers that require a very small amount of ink from 220 to 1500 ml. The rounded shape of the ink channel in the chamber blade results in improved circulation of the ink with less tendency to trapped air and allows for easier cleaning. All of these criteria help to make a machine easy to operate for the operator and easy to change over.

Conclusion

With its concept for fully flexible process and job changes at a primary process level, Gallus is fully in line with the requirements of today's macro trends in label and packaging printing. In particular, rapid job and process changes are becoming significantly more important in order to remain competitive and produce efficiently. At the same time, a flexible machine concept means investment security for the user, as it can be quickly adapted to changing market conditions. Thus, it is worthwhile for printers to calculate the cost of day-to-day production on a label printing machine – over the entire life cycle of the respective machine solution. In the course of increasing industrialization in label and packaging printing, the productivity of the machine solution is becoming the main driving force for sustainable business success.

Source reference

[1] Joanna Stephenson, Marketing Director of EFIA, »Packaging Trends, Shaping the Future of Print«, Conference in Brussels/B, February 2019.

