

## CASE STUDY FREY CHOCOLAT SUISSE



**Industry:** Food

**Application:** Coding and marking of packaging

**Material:** Cardboard and plastics

# INDUSTRY 4.0 AND THE CHOCOLATE FACTORY



### CLIENT

Chocolat Frey AG is the undisputed leader in the Swiss chocolate market (market share of 33.2 % in Swiss retail. Source: Nielsen). The chocolate manufacturer began producing chocolate bars and chocolate powder in 1887.

Today, the company offers a wide range of taste sensations including chocolate bars, pralines, snacks and chewing gum – under the umbrella of the Swiss Migros trading group.



### REQUIREMENTS

A marking system with a high number of interfaces was required to mark cardboard and plastic packaging with a best-before date and a batch number, also as an overhead application.

At the same time, aspects for the digitalization of industrial production (industry 4.0) had to be considered in order to pave the way for the individualized mass production of chocolate products.



### SOLUTION

Chocolat Frey AG opted for the Leibinger JET3up, which meets all its requirements – also thanks to the interfaces available as standard. The unique Sealtronic technology from Leibinger was also very convincing. The fully automatic nozzle sealing system hermetically seals the entire ink circuit during production breaks. This prevents the ink from drying out. The printer is therefore ready for use at any time – without cleaning.



Manfred Leuenberger, Technical Manager in the Confectionery Division at Chocolat Frey AG.

"We were surprised that the CIJ printer even works overhead without any problems – i.e. it prints against gravity and still produces a perfect typeface," says Manfred Leuenberger, Technical Manager in the Confectionery Division at Chocolat Frey AG.

## Migros subsidiary Chocolat Frey AG modernizes its packaging systems with Leibinger printers

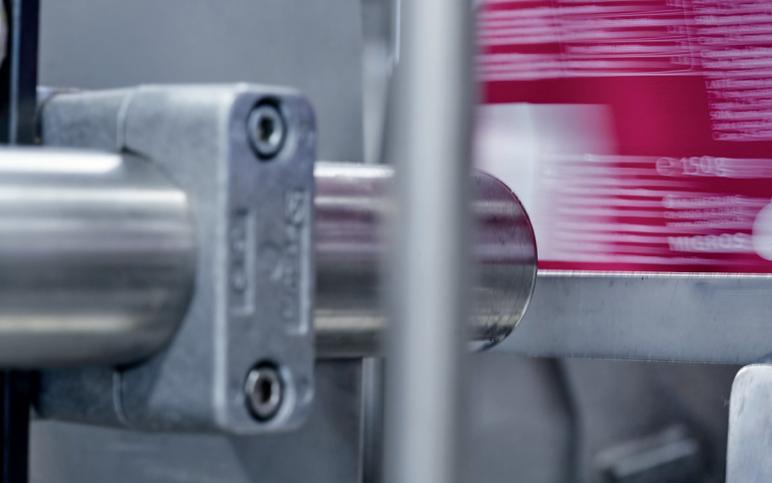
**Chocolat Frey remains on course for Industry 4.0. The Migros subsidiary is on its way to becoming a Smart Factory that enables customized mass production. The latest module in its digitalization portfolio: inkjet printers from Leibinger, the industrial printer manufacturer from Baden-Wuerttemberg, Germany, which feature sufficient interfaces.**

The cornerstone of Chocolat Frey AG, a subsidiary of the Migros Swiss trading group, was laid by the Robert and Max Frey brothers in 1878. And they most probably wouldn't believe their eyes if they could witness the extent to which the company has evolved through today. The 70,000 square meter production plant in Buchs near Aarau produces 2,400 confectionery products every year – chocolates, confectionery products and chewing gums. Over 42,000 tons worth. And with a market share of close to 33 percent, Chocolat Frey is now number one in the Swiss chocolate market. But that's not all – the company is also a pioneer in digitalization. In a pilot project, it gave customers an opportunity to order their own chocolate boxes via Twitter. Robots, which normally perform the same routine a thousand times over, pack the desired chocolate bars into the box and prepare them for shipment. Each box is unique.

At some point, this customized mass production could become part of everyday life in Chocolat Frey's production program. This is why Manfred Leuenberger, Technical Manager in the Confectionery Division, only buys machines and systems that are equipped for the new industrial era. When he set out to search for new printers to mark packaging with a best-before date and batch number in 2018, he knew the devices also had to be suitable for Industry 4.0. "We therefore paid special attention to the interfaces when choosing a future-proof printer," recalls Leuenberger. He finally opted for the JET3up inkjet printer from Leibinger, an industrial printer specialist based in Tuttlingen, Baden-Wuerttemberg (Germany).

### **A wide range of interfaces makes new printers suitable for industry 4.0 applications**

"The printer impressed us with its standard interfaces for two-way data traffic, which are only available from other manufacturers with additional costs. The JET3up model features a product sensor input, an incremental encoder input, eight digital outputs, ten digital inputs, twelve additional inputs with defined special functions, serial interfaces (RS232 to 115,200 baud) as well as a USB and Ethernet connection.



The products are marked with CIJ technology during ongoing production without contact.

A Chocolat Frey product marked with a best-before date and a batch number.

"Thanks to this wide range of interfaces and their high level of reliability, the printers represent a strong part in Smart Factory automation chains," explains Christina Leibinger, CEO and Owner of the Leibinger Group. "The devices can be easily integrated into automated production environments and are flexible enough to grow with the requirements of Industry 4.0". Additionally, the devices can be operated as easily as a smartphone via a 10.4-inch touchscreen. Leibinger's industrial printers are now integrated into several packaging systems at Chocolat Frey. A system automatically erects empty cardboard boxes, glues the bottom and prints the best-before date on the underside. Another printer is used for marking plastic bags.

Leuenberger was convinced of the printing quality as early as during the product presentation. "A Leibinger employee picked up the print head and led it past a sheet of paper. As if by magic, without touching, a perfectly legible font appeared on the surface," Leuenberger recalls. This type of marking is called Continuous Inkjet (CIJ). Inside the print head, which is mounted under the conveyor belt and connected to the hydraulic housing via an umbilical, ink drops shoot through a tiny nozzle in the direction of a collecting tube – at a rate of 96,000 drops per second. When printing, two deflection electrodes change the trajectory of individual drops. They land as a pixel on the product surface and dry within one second. Dot by dot, up to five-line fonts and graphics, barcodes and data matrix codes are produced – and all at a maximum printing speed of 10 m/s. The ink adheres to almost all surfaces, including plastic, glass, metal and wood. "We were surprised that the CIJ printer even works overhead without any problems – i.e. it prints against gravity and still produces a perfect typeface," says Leuenberger. And the printers never even have to call up their top performance in terms of speed. The system runs comparatively comfortably, at a throughput of around 50 products per minute.

### The printer requires hardly any maintenance

Production cost-effectiveness also depends on the amount of maintenance required for machines and printers. Many inkjet printers used by Chocolat Frey had the problem that the print heads dried up regularly during production breaks. As a result, employees had to allow for up to one hour of cleaning time before production started. This resulted in the loss of valuable production time. And in spite of the cleaning, incorrect markings occasionally occurred during start-up production, leading to rejects. Unthinkable in the Industry 4.0 era. After all, the objective is to save time in order to economically manufacture even small batches and customized products.

The fully automatic Sealtronic nozzle sealing system, for which Leibinger printers are known, was therefore a highly welcome benefit at Chocolat Frey. As soon as the user switches off the printer, a spindle drive starts up and the collecting tube drives onto the nozzle, hermetically sealing the printer's entire ink system during production breaks. Air therefore has no chance of entering the closed circuit and drying out the ink. If the user switches the printer on again after a production break, it is always immediately ready for operation. "Thanks to Sealtronic, we save close to an hour of cleaning work before every production start," says Leuenberger enthusiastically. "This time saving alone ensures fast amortization of the investment". Furthermore, the printers are economical. One liter of ink can print up to 160 million characters. With less than 25 watts, the devices consume only as much electricity as a standard mobile phone charger.

### **About Paul Leibinger GmbH & Co. KG**

Leibinger is a global specialist in coding and marking systems headquartered in Germany. The third-generation family-run company, founded in 1948, develops and produces industrial inkjet printers at its site in Tuttlingen, Baden-Wuerttemberg, with close to 250 employees. The CIJ systems distinguish themselves through their high quality standard and a fully automatic nozzle sealing technology, which minimises the printers' cleaning requirements.

The global network with over 150 service partners and a subsidiary in the USA ensures that Leibinger maintains a close relationship with its customers all over the world.

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