



„Truly Swiss – Truly excellent“

This motto of Midor AG accurately describes the result of the collaboration between two trend-setting Swiss companies. As the leading manufacturer of biscuits and ice cream, Midor has provided a guarantee for products for more than 75 years which meet the highest quality requirements. When it comes to packaging for these delicate biscuits, Midor relies on state-of-the-art Swiss robot technology from Sigpack Systems.



Chaotic at first sight – but fascinating and intelligent when observed for a longer period: The coordinated and efficient method of working of the eight Delta robots.

Top quality right through to packaging

«Créa d'Or – the fine biscuit collection with exquisite ingredients for exclusive moments with a hint of extravagance». This is precisely the promise given by Midor in respect of product quality. The demands on the packaging process are correspondingly high. Only perfect biscuits must be placed in the trays without any damage whatsoever, in observance of critical hygiene regulations. The goods are always produced and packed fresh. The company must therefore also be able to respond to requests at short notice. Manual packaging is not an option since the industry is subject to

great cost pressure as a result of rising commodity prices. To ensure increased productivity, Midor has been practising fully automated packaging with the aid of robots for many years. However, with this project, the challenges lay in the detail, which meant that the company also sought the special expertise and experience of a packaging expert.

Gentle product handling challenge

Neither the pure production rate nor the number of formats are unusual for this project. More than 800 biscuits per minute and 18 different products are common figures for modern, vision-based



robot packaging lines. But only products which can be picked safely and gently can also be packed without any loss of quality. The exquisite biscuits from «Créa d'Or» have a number of vagaries especially in this respect. For example, the wafer-thin «Edelweiss» biscuits are both crispy and fine but also very fragile. If just one of the 32 «Edelweiss» biscuits contained in a single pack is damaged while being inserted, it will render the entire container unsaleable. Or take the sandwich biscuit «Linzer». The jam on the surface is still liquid immediately after baking. And finally «Vanilla Kipferl», with their distinctive characteristic of being covered with powdered sugar.

Conventional vacuum devices would bond with the jam or suck up the powdered sugar. Although these problems can be solved by mechanical grippers, these have the disadvantage of needing extensive cleaning while also being comparatively critical in function. In addition, adjustment of the force of the grip on the product is relatively imprecise. The Airflow tool, a gripper developed and patented by Sigpack Systems especially for products with a crumbly or sticky surface, offers a far better solution. Products are enveloped in an airflow and gently lifted with the aid of the force generated by variable flow speeds. To increase the picking performance, a

stack of several biscuits can even be created inside the gripper. For the «Vanilla Kipferl», the company uses a gripping device with small rubber fingers. These fingers are mounted onto a membrane which, depending on the internal pressure, arches inward or outward, causing the fingers to open or close accordingly. Based on this principle, the force of the grip is distributed equally across all fingers. Since each type of gripper used has the same interface to the robot and is activated through vacuum, the change-over can be effected within a matter of minutes. Cleaning too is very safe and easy since no mechanically moveable components are used.

1 All eight Delta robots are operated through a central touch panel, on which process parameters can be optimized also during production.

2 Depending on the product, special optimized gripper types are used to avoid damaging the exquisite biscuits in any way.





**Better «Good and many»
than «Bad and few»...**

The grippers represent the philosophy of the Sigpack Systems packaging lines – safe and efficient functioning with little maintenance. For example, Sigpack Systems uses container denasting devices with two independent heads per infeed as a matter of principle. Because experience has shown that even expensively produced containers regularly cause malfunctions. If one of the heads communicates a problem, the other denasting head automatically takes over interruptions to the flow of containers and resulting product overflows are reliably avoided. The ability to respond

immediately to changing external conditions is also essential for efficient operations. For instance, baking processes are subject to natural variations. Control by robots therefore offers the opportunity to adjust all key setting values online without interrupting production as well as dependent on set user levels. Overall, this allows greater product tolerances without any detrimental effect on the insertion quality. However, the key players are the highly dynamic Sigpack Systems Delta robots. They are known for their maintenancefree and robust design, which guarantees many years of fail-safe and reliable operation. All in all, Midor is delighted with the function

of the line. That's not surprising, since it not only meets the required 98.7% insertion quality but even exceeds the performance targets. In this case, the typical Swiss virtues – highest quality and precision as well as a love for detail – complement each other perfectly. Simply: «Truly Swiss – Truly excellent».

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Precise and gentle placing of the tender and crispy almond biscuits – up to 100 times per minute.