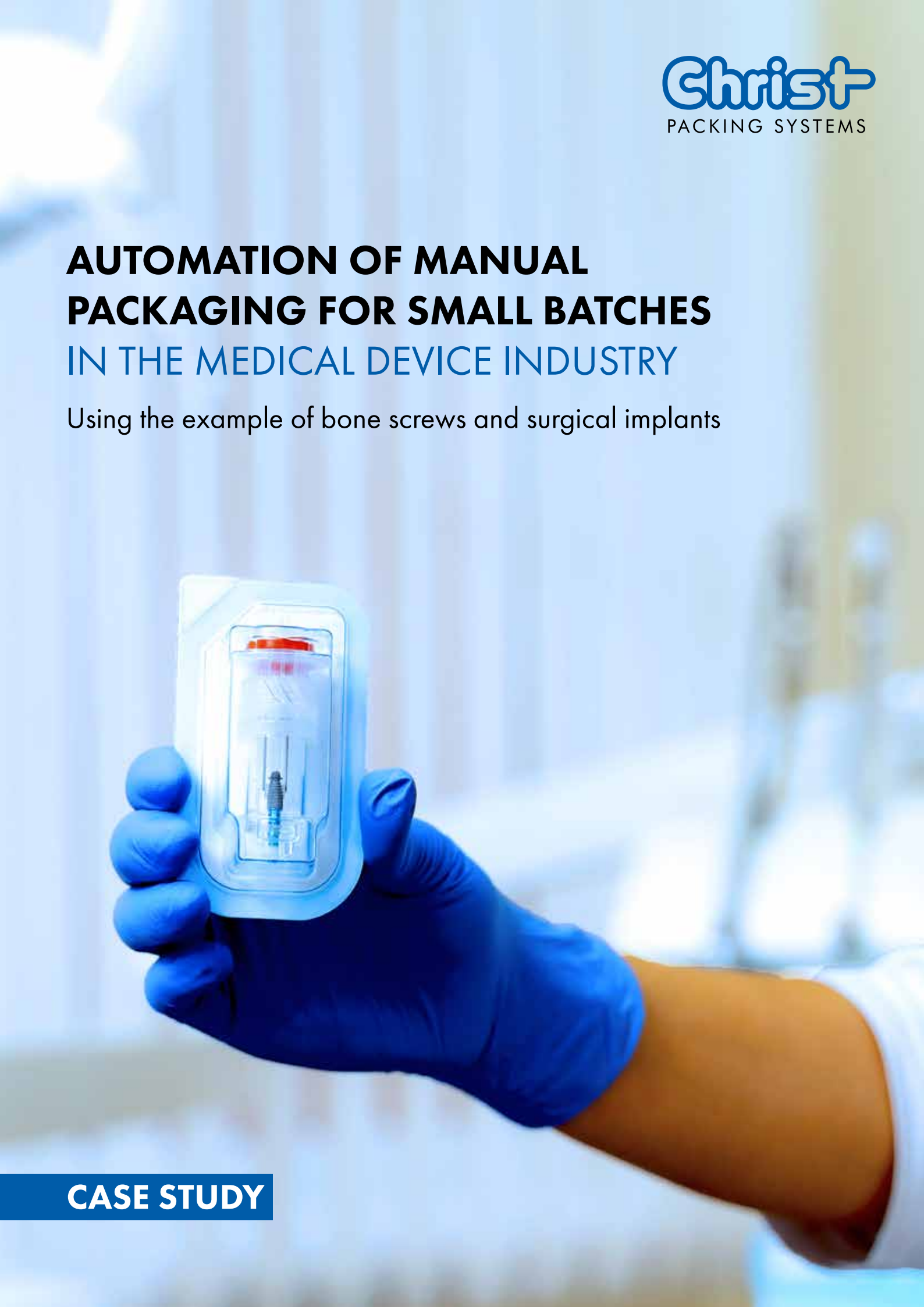
Christ
PACKING SYSTEMS

AUTOMATION OF MANUAL PACKAGING FOR SMALL BATCHES

IN THE MEDICAL DEVICE INDUSTRY

Using the example of bone screws and surgical implants



CASE STUDY

FROM MANUAL PACKAGING
TO AUTOMATED SOLUTIONS

The pressure to automate the packaging process is increasing – even for small batches of medical devices.

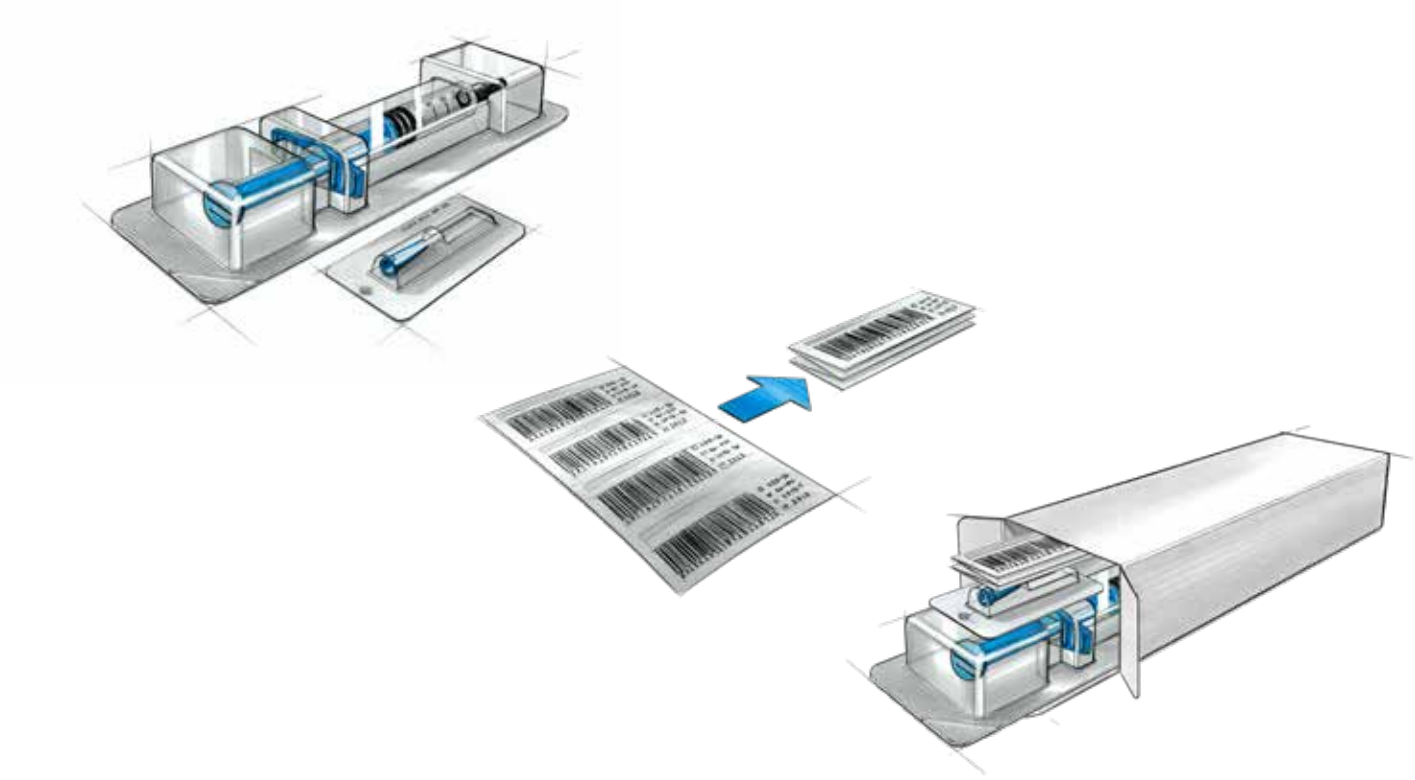
Packing by hand? It remains the case in many areas of the medical device industry. There are many reasons for this: the batches are small, the products are sensitive and the packaging process is specialized or varies greatly. But companies are increasingly looking for more flexibility and less dependence on staff availability, and there is a significant shift towards the automation of the packaging process in the medical device industry – even when dealing with small batches of medical devices.

One company that specializes in automating packaging processes for medical devices is Christ Packing Systems, based in Ottobeuren, Germany. Thanks to its modular and easily customizable BoxTeq cartoning machine, even the most complex manual packaging processes can be automated. This enables companies to produce more efficiently and with less reliance on human resources – a key competitive advantage in the medical device sector.

When it comes to high-value medical products, such as surgical implants or bone screws, they are often still produced in small batches of 50-100 units and manually packaged in folding cartons.

The packaging process is complex due to varying product sizes and numerous packaging configurations for different target markets. In addition, the speed of the packaging process and the output is highly dependent on staff availability, which becomes a problem especially during holidays and sick leave periods.

In this case, an automation solution is the answer. However, a standard cartoner cannot perform all the complex tasks of a manual packaging process, and developing a completely new packaging machine is often not feasible due to the time and cost involved.



Hard blister with sensitive medical products: A complex manual packaging process needs to be automated.

Vertical integration: State-of-the-art production facilities and decades of experience enable customized and predictable automation solutions within the specified time and budget frame.

As standardized as possible, as customized as necessary

Medical technology companies rather need a tailor-made solution that meets their high-quality standards and at the same time fits in with their internal cost and time schedules. This is where the modular concept of the BoxTeq from Christ Packing Systems comes into play. The cartoner can be easily customized and extended with additional components.

„When customers visit our production facilities, they quickly realize that we have the experience and all the resources on site to successfully carry out such a project," explains Jürgen Sikora, Key Account Manager at Christ Packing Systems. With more than 70 years of experience, a production area of 12,500 m² and a high degree of in-house production depth, Christ is able to respond quickly and flexibly to customer-specific adaptations. This makes customization easier and more predictable.

Our vertical integration of approximately 87% gives us the flexibility to implement customer-specific adaptations quickly and easily.

Jürgen Sikora, Key Account Manager at Christ

OVERVIEW: CUSTOMIZED PACKAGING SOLUTIONS FOR HARD BLISTERS

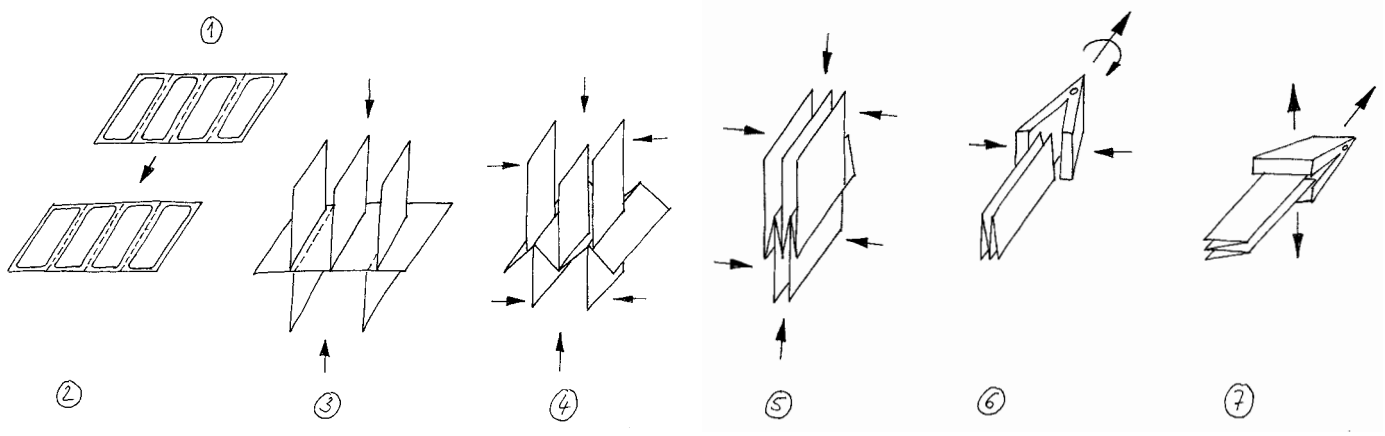
This case study describes a specific customer project where bone screws in hard blister packs with various inserts were to be automatically packed into folding cartons and individually labelled. Christ developed a comprehensive packaging solution consisting of three parts: a feeding solution, a BoxTeq cartoner and a LabelTeq labelling solution.

A special container was developed for the customer to feed the hard blisters into the cartoner, which acts as a reservoir for the blisters to be packaged. This was important as secondary packaging takes place in a separate room. The packaging process starts with a blister being automatically fed from the magazine onto the product transport.

A patient label, which is automatically printed and folded, is then added to the blister. Both are transported together to the BoxTeq cartoner where the folding cartons are fed, erected, filled and sealed.

The sealed folding carton is then transported to the LabelTeq labelling station, where multiple labels are printed and applied to different sides of the carton. The entire packaging process is monitored by sensors and cameras. All printed labels are checked for accuracy before application – only correctly printed labels are fed into the process. Electronic digital position indicators provide additional process reliability during format changeover.

The BoxTeq, the centerpiece of the automated packaging line, is modular and customizable.



The fanfold label is automatically folded and inserted into the folding carton together with the hard blister – for greater scalability and consistently high packaging quality with less waste.

Maintaining process standards

When it comes to medical devices, it is often easier to adapt the machinery to the existing packaging process than to change proven processes. This is because changes to validated processes and packaging materials always involve risks and costs: If every move in the operating theater is to be perfect, the surgeon must be able to rely upon the product coming out of the carton in the correct position and the relevant information being readable at first glance.

In this customer project, for example, a special folding of the patient label specified by the customer had to be adhered to. Christ developed a special folding unit that uses three folds to bring the patient label into the required shape. „However, the special fold posed a few challenges," recalls Karin Schmalholz, Project Manager at Christ. „The accordion-folded patient label sometimes bounced like a tight spring. But our engineering team quickly found the right solution for this too."

Christ developed an additional fixture to hold the patient label in place. This allowed the products to be packaged according to the customer's requirements.

Even for customer-specific requirements such as special label folding, our engineering team can quickly provide the right automation solution.

Karin Schmalholz, Project Manager at Christ

Fast and secure format changeover

The desire to switch between formats quickly and easily also leads to customer-specific adaptations: „For this customer project, we had the idea of adapting the drive of the product carriers in the LabelTeq," reports Jürgen Sikora. „Instead of the product carriers being coupled with only one drive, they were equipped with two independent drives, which enables automatic longitudinal adjustment of the bucket chain transport."

To ensure that the machine is always set correctly, Christ equipped the cartoner's format changeover points with electronic digital position indicators, which automatically receive their target value from the control system. In addition, a control mechanism has been integrated to ensure that the machine can only be switched on when everything is set to match the selected format. This ensures greater process reliability.

Automatic longitudinal adjustment of the bucket chain transport and electronic digital position indicators ensure reliable format changeovers.

Reliable process control with sensors and cameras

In the field of medical devices, it is particularly important that the packaging quality is monitored reliably and automatically.

In this specific example, extensive sensor technology ensures that all the required components such as blister packs and patient labels are included in the folding carton. The customer's camera system, which is integrated into the LabelTeq, checks that the correct labels are applied in the correct places and around the specified sides.

If necessary, the packaging line can also be switched to manual feeding before the LabelTeq. This means that individual items can be labelled subsequently if required.

A CONVINCING RESULT

With packaging solutions from Christ, customers in the medical device industry can design their own packaging processes more efficiently.

Even for complex packaging tasks, including frequent format changeovers, Christ develops tailor-made solutions that guarantee high process reliability and consistent packaging quality.

Automating the packaging process is therefore also worthwhile for small product batches. As a result, customers are less dependent on staff availability and can scale their output more flexibly.

Integrated camera and sensor systems ensure reliable process control and guarantee consistently high packaging quality.

AT A GLANCE

Automation of complex manual packaging processes in the medical device industry, using implants and bone screws as examples

SITUATION

Many medical device companies are producing small batches that are packaged into folding cartons and labelled by hand. Manufacturers are dependent on reliable employees. Despite frequent format changeovers and monotonous work, quality must be ensured at all times.

CHALLENGE

Due to the large number of manual activities, the process is difficult to scale. Staff shortages lead to fluctuations in output. The packaging process therefore needs to be automated. A standard cartoner is not suitable for this, as it cannot map all the complex processes involved.

SOLUTION

Christ specializes in the automation of complex packaging processes. In this customer project, Christ adapts its modular cartoner to the specific requirements of the packaging and labelling process. A camera and sensor solution is integrated to ensure reliable quality control.

RESULT

The customer can flexibly adapt production to demand and switch between formats quickly and reliably. This way, the company becomes less dependent on staff availability. Automation allows for consistently high packaging quality with less waste.

REQUIREMENTS

- Patient label to be folded automatically according to customer specification
- Hard blister and patient label to be packaged together in a folding carton
- U and L labels to be printed and applied to the folding carton on a product-specific basis
- Primary and secondary packaging are physically separated
- Space for secondary packaging is extremely limited
- Reliable process control

IMPLEMENTED AUTOMATION SOLUTION

- Compact BoxTeq cartoner with customized infeed including individual magazine
- Product transport with automatic longitudinal adjustment in the LabelTeq
- Comprehensive quality control with sensor and camera systems
- Customized patient label folding unit
- Fast and reliable format changeover due to electronic digital position indicators with target value specification

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