



Automation of packaging processes in the pharmaceutical sector

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Urgent need for changes in the drug production process

The international crisis caused by COVID-19 allowed the identification of problems in many sectors of the economy, including the healthcare industry. To meet the demand for medicinal products, whose shortage is particularly acute in healthcare facilities, pharmaceutical companies are working with greater intensity, often moving to a three-shift pattern.

However, this is not enough. There are also concerns about the safety of staff that employers do not want to put at extra risk. Moreover, if at least one worker gets infected or is kept in quarantine, production is threatened. All this brings the need for immediate improvements at every stage of the manufacturing process of medicinal products, including their packaging.

Automation of production processes

Good time management in the production of medicinal products is one of the key elements determining its effectiveness. For this reason, automation, thanks to which it is possible to reorganize specific phases of the manufacturing process, has recently gained great recognition. Modern, extremely precise systems allow both proper planning and smooth execution of specific tasks. The process that affects production to the smallest extent, being the easiest to implement, is the packaging of the products already produced. Specialist end-of-line devices such as packaging cells and palletizers improve operations supporting the distribution of medicines while ensuring their protection.



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Key success factors

When creating the plan of a project related to automation and robotization of the packaging process, it is worth taking into account several aspects that may determine the outcome and the level of satisfaction with the solution already implemented.

- ✔ Implementation of automation as part of the process of optimizing and improving material flow in the factory – thanks to advanced simulation tools (e.g. Digital Twin), the developed solution meets not only the requirements of a particular line but also all requirements of the plant logistics system and is consistent with them.
- ✔ Systematization of a technical solution depending on the handling method of a particular product assortment, related to packaging of products with different characteristics, e.g. ampoules, sachets, cardboard boxes – development of reliable solutions that reduce the risks associated with effective handling of a given product.
- ✔ Specialist solutions for packaging cells in the „predictive maintenance” area – avoiding many predictable failures and reducing service response time.
- ✔ The concept of packaging automation taking into account the process of technical standardization – reducing development costs and implementation time in the case of next investments in the pharmaceutical industry.
- ✔ High technical standards with emphasis on verification of critical functionalities of packaging cells – taking into consideration prototype tests and validation tests of packaging machines on the shop floor.
- ✔ Materials from trusted suppliers, well-known in the pharmaceutical industry – avoiding serious problems with station functionality.
- ✔ Own shop floor and experienced engineering team – availability of the hall if the packing station cannot be installed at a specific site.
- ✔ Design of customizable stations taking into account production continuity – e.g. stations with manual operation areas, additional areas with rotators, special system of sliding gates to ensure continuous operation of the station.
- ✔ Mobile packaging cell concept – possibility to connect it to various pharmaceutical machines.
- ✔ Validation process related to the declaration of conformity throughout the entire packaging cell project – the possibility of making changes to improve work safety at the concept level.



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Examples of packaging cells for the pharmaceutical industry

Standard packaging cell

for the packaging of pharmaceutical cardboard boxes into one bigger cardboard box or plastic container

Standard packaging and palletizing cell

for the packaging of pharmaceutical cardboard boxes into one bigger cardboard box and palletizing of cardboard boxes on pallets

Both solutions require a small working area and allow for quick, flexible adaptation of production and standard concepts to the current needs and specific requirements of the client, guaranteeing full process automation. They can also be modified based on both size and type of packaged items and cartons

and reinforced through additional processes such as gluing, scanning, vision inspection, sticker application or marking. Using a standard base with these solutions results in quick and cost-effective implementation and minimized project risk.

Strategy in the automation project

A holistic approach to project implementation combined with extensive consultation, which aims at a deep understanding of the client's requirements and expected implementation effect, allows optimization of project assumptions. It enables the optimal choice of functionality vs cost values, which directly translates into the project ROI. Thanks to proper assumptions maneuvering,

the investment decision is supported by a short payback period while responding to the specific needs of the client. In addition, other risks associated with emergencies such as illness or unpredictable sick leave are reduced. Automation also reduces costs associated with the onboarding of new employees and possible complaints related to changing process quality in the case of manual operation.



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Sii's approach to project implementation

Effective management

The task of the specialized Project Management Office unit, operating within the Sii structure, is to exercise full control over the implementation of projects for the pharmaceutical industry, in the case of which it is crucial not only to maximize efficiency but also to keep manufacturing costs as low as possible. PMO's use of the proven Sii Project Intelligence management methodology allows for the timely delivery of top-quality solutions.

In-depth analysis and risk control

Risk management is an important part of project management methodology, guaranteeing rapid and efficient validation and introduction of packaging stations into production. Sii remains responsible for

Flexible cooperation models

Sii cooperates with clients in the pharmaceutical industry based on the One-Stop Shop and Smart Factory concepts, which are all about providing a full service, regardless of the implementation area. Smart Factory is related to implementations in accordance with Industry 4.0 theory and digitization of the flow of information from the production level to business systems. On the other hand, the One-Stop Shop offer adjusted to the client's needs includes, among other things, engineering solutions, software development and testing, BI data analytics, ERP systems, BPO and consulting.

regular evaluation, control, communication and risk assessment throughout the entire project, at the same time maintaining the highest pharmaceutical industry quality standards.



Przemek, Competency Center Director

Packaging process automation with Sii

Automation of the packaging process is one of Sii's key competences used in the case of engineering services. Cooperation with more than 30 clients in

the pharmaceutical sector is based on experience, knowledge of good practices, properly designed infrastructure and professional project management.

Effective delivery of packaging automation solutions is possible thanks to:



qualified engineering team specializing in the design and manufacture of automated and robotic production cells for packaging a wide range of products,



access to **own production space** with the necessary equipment and qualified engineering team,

- convenient location: Gdansk (airport and A1 motorway);
- area: 1 000 m²;
- prototype lab with ABB robot and Siemens equipment;



properly selected team of project managers with knowledge of good practices in the pharmaceutical industry.



technical expertise in the design and operation of specialist software,

- mechanical design: NX Siemens, SolidWorks, Inventor, CATIA;
- electrical design: EPLAN;
- PLC driver programming: Siemens Allen Bradley;
- industrial robot programming: KUKA, FANUC, ABB;



many years of experience in the automation of packaging and palletization processes in production areas,

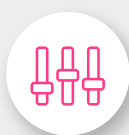
- tools based on servo drives, electric motors, pneumatic drives, specialist support structures and mobile ramps, pallet and product transport systems, positioning tables, grippers on suction mats;

Effects of cooperation with Sii

The expertise gained during the implementation of many projects related to automation and robotization of packaging processes allowed Sii to add technical solutions meeting specific needs of organizations in the pharmaceutical sector to its offer. Thanks to

the flexible approach and experience in packaging an assortment of products of varying features, including ampoules, sachets and cardboard boxes, expert teams are able to propose and implement different tools while reducing potential risks to a minimum.

What cooperation with Sii means:



Having full control over the current state of affairs, with emphasis on costs and production capacity



Adjusting production to changing needs quicker and at a lower price



Gaining a competitive advantage

Looking for support? Contact Sii!

To find out how automation can improve packaging processes in your company, contact our expert. Also, get acquainted with Sii's offer for the pharmaceutical sector:

[Visit our website](#)

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