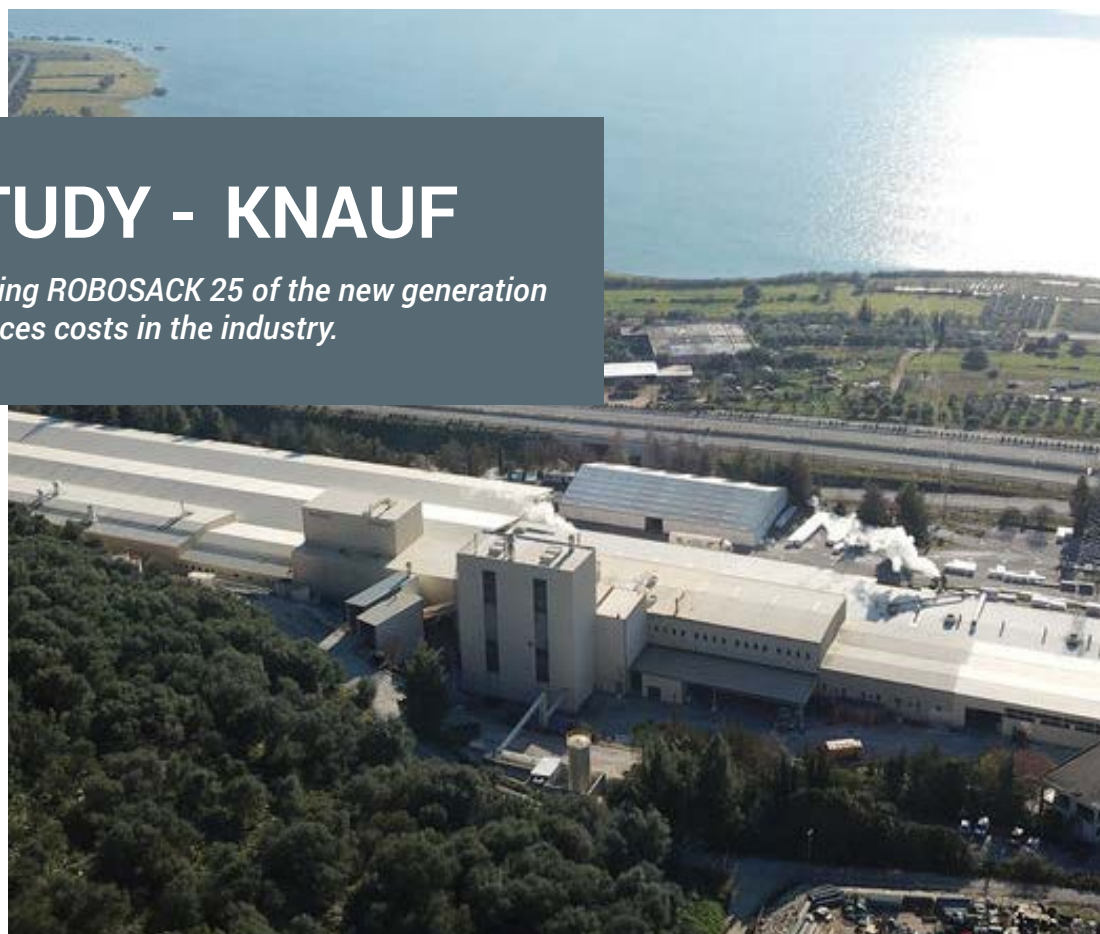


SOLUTION STUDY - KNAUF

The robotic solution for palletizing ROBOSACK 25 of the new generation enhances productivity and reduces costs in the industry.

The solution proposed by Gizelis Robotics for Knauf's facilities in Amphilochoia refers to the ready-to-use ROBOSACK 25 cell, integrated robotic palletizing system equipped with a robotic arm from Yaskawa. It is a new-generation industrial robotic arm, specialized for sack palletizing applications.



The challenge of increased demand for products:

Due to the growing demand for 25-kilogram sacks, Knauf sought a palletizing solution from Gizelis Robotics that satisfied the following criteria:

- Palletizing 25-kilogram sacks
- Production speed of 600 sacks / hour
- Maximum pallet height of 1.800mm
- Reduction of production costs
- Small spatial footprint
- Less frequent maintenance
- Smart handling of sack



About Knauf

From a family business to a corporate family.

Rarely does the name of a company say so much about its philosophy, as in the case of the brothers Dr. Alfons and Karl Knauf. Coming from a family of miners, the brothers, who completed their studies as mineralogists, founded their company in 1932 in Southern Germany, focusing on the exploitation of a promising material at the time, gypsum. The first construction material was produced, marking the evolution of Knauf Drywall Systems in construction.

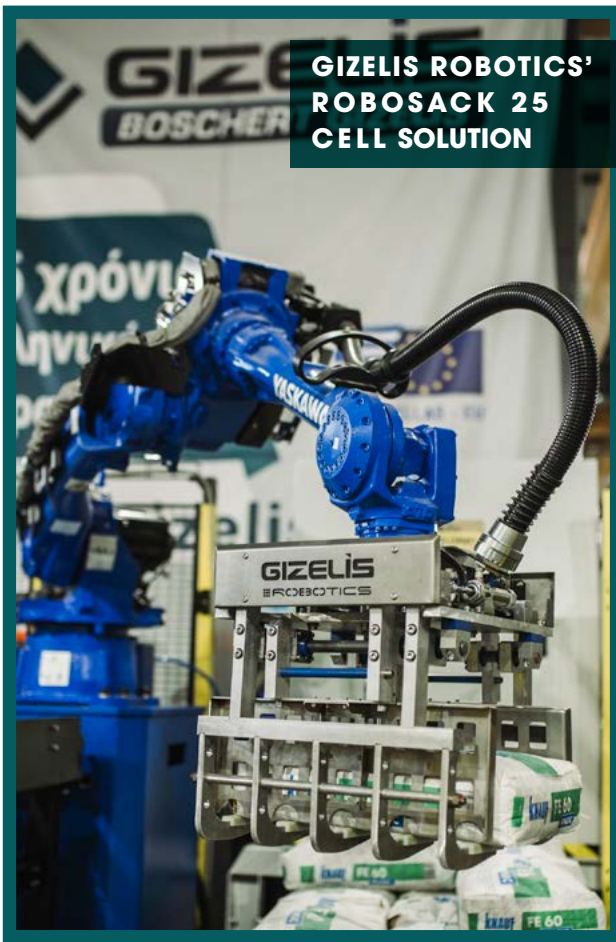
The family business evolved into a family of companies on a pan-European scale and later on a global level. Today, Knauf is one of the leading manufacturers of construction materials and systems.

Knauf is represented worldwide on all five continents in more than 90 countries, with production facilities and sales organizations in over 300 locations.

In 2021, the Knauf Group achieved annual sales of 12.5 billion euros with approximately 40,000 employees worldwide.

The Knauf Group is managed by the managing partners Jörg Kampmeyer, Alexander Knauf, and Dr. Uwe Knotzer. In many countries, the name Knauf remains synonymous with gypsum, a raw material with exciting properties.

Products and insulation materials related to gypsum are manufactured and sold in almost all countries in Western and Eastern Europe. Knauf Group companies are also successfully operating in the USA (insulation materials), South America, Asia, Africa, and Australia.



**GIZELIS ROBOTICS'
ROBOSACK 25
CELL SOLUTION**

The solution

The ROBOSACK 25 cell proposed by Gizelis Robotics is a comprehensive robotic palletizing system equipped with a Yaskawa robotic arm, specifically the MPL 80II arm.

This new-generation industrial robotic arm, with 5 degrees of freedom, is specialized for palletizing applications. Its design is based on the requirements of modern production, as the placement of the motor-reducer directly at the pivot point allows for significant maintenance cost reduction.

This is because the reducers do not require maintenance, and endless screws, drive belts, and limit switches on the axes, elements that require increased replacement and adjustment costs, are omitted. A robotic gripper was added to this arm, capable of transporting sacks from the pick-up point to the pallet without altering the product's geometry or causing damage.



Gizelis Robotics' ROBOSACK 25 solution includes a comprehensive management system with:

- Special rollers for optimal product distribution
- Safety arrangement with safety fences, photocells, and a safety controller
- Special SCADA control using a high-definition HMI for operator interaction with the system.

Innovative proposal for product handling with full space utilization:

Gizelis Robotics' proposed solution involves a comprehensive robotic management and handling system for sacks in continuous coordination with the existing feeding and filling machine for sacks. The product handling solution was a challenge for the Gizelis Robotics team, as the existing installation's spatial footprint had minimal available space and allowed no room for error.

The belts were designed specifically for the movement of paper sacks, emphasizing:

- Smooth handling of the sack without injuries
- Ensuring product quality.

Finally, the belts were designed for movement at different elevations to adapt to the client's spatial footprint and avoid the relocation of existing machines.

Advantages of the robotic solution

1. Higher quality end result
2. Space savings due to the reduced footprint of the robotic solution
3. Measurable production times without unforeseen interruptions or fluctuations in the production flow
4. Flexible handling design that can support changes in future needs..

Mr. Evangelos Gizelis, CEO of Gizelis Robotics, stated: "We are proud because the implementation of Gizelis Robotics' ROBOSACK 25 solution at Knauf's Amfilochia facilities is a real example of successful adoption of robotic technology, aiming to improve working conditions, increase productivity, ensure a stable and uninterrupted production process, and guarantee the safety and health of workers."