

# KUKA



Food industry  
\_Automation for every taste



## Small info bites, freshly served

The food industry is diverse - as is the potential for automation. These facts show why robots and food are a particularly tasty combination.



### 113,000 robots

According to the International Federation of Robotics (IFR), 113,000 robots were already working in the food industry by the end of 2022 - and the trend is still rising. While they used to be mainly responsible for palletizing and packaging, robots are now mastering increasingly complex tasks, including handling raw materials and preparing food. No wonder the demand is steadily growing.



### ROBOT USE: Involving half of the industry

Around 49% of companies in the food industry state that they use robots (DLG Trend Monitor Robotics 2023). Those who already use robots tend to have good experiences and usually want to continue investing in them. The most frequently cited reasons are improved working conditions, greater efficiency and the skilled workers shortage.



### 44%

Mobile robotics solutions in the transportation and logistics sector outperform every other application in terms of market share. In 2022 alone, their sales increased by 44% to a total of more than 86,000 units sold.



Made for ice-cold extremes:  
The KR QUANTEC PA Arctic was developed for deep-freeze palletizing and really comes into its own at minus 30 degrees Celsius. It is the only robot on the market that can operate at this ambient temperature without a protective cover or mechanical heating.

### 333 kilograms...

... of food is eaten by the average person in the world each year. With demand rising, around 2.7 trillion kilograms of food will be consumed worldwide in 2024. This figure is expected to rise to more than 3.1 trillion by 2028, according to Statista. Bread and cereal products will account for the largest share (25%), followed by vegetables (21%) and dairy products and eggs (16%).



## Dear reader,

Automation in the food industry is in full swing: the demand for robot-based solutions continues to grow - from the delivery of raw materials to product processing and intralogistics. A challenge that KUKA is happy to take on!

We have been focusing on the food industry for more than 20 years and count more than 1,000 companies as satisfied customers. Our robots in the "Hygienic Oil" (HO) version with food-grade NSF H1 lubricants are at the heart of this success.

This provides the necessary flexibility for our customers as the industry continues to move forward. Meat substitutes are becoming increasingly popular, as are ready-made and frozen products. There is also a growing awareness of more sustainable packaging solutions where special taxes or bans on plastic packaging are already in place in parts of Europe. The trend towards co-packing and repacking is also changing the requirements.

However, the biggest challenge remains the skilled workers shortage. For example, in some large bakeries - despite high demand - production lines are repeatedly at a standstill due to a lack of personnel. This is another reason why KUKA pursues a consistently holistic approach to automation, which includes the appropriate software solution. As a result, robots are becoming increasingly easy to operate, and many standard solutions are becoming established such as light palletizing. Thanks to our broad portfolio of palletizing robots from 40 to 700 kilograms, we offer the right robot for every application. KUKA Customer Service is always at your side from initial information to configuration and maintenance.

Discover what is already on the table today with the help of KUKA robots. Whet your appetite for the automation possibilities of tomorrow!

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# Appetite for automation: Recipes with guaranteed success

The food industry is on the move. With the demand for nutrient-rich meat alternatives growing, so is the demand for sugar-reduced and regional products from organic farming. Occupational health and safety and hygiene requirements are also increasing. This poses major challenges for the entire industry. One successful recipe: automation.

KUKA supplies solutions for over 1,000 customers in the food industry worldwide and understands their needs and objectives. Integrated automation with a perfect interplay of software, robots and service increases the productivity of food production. KUKA supports this with a broad portfolio of innovative technologies and a large network of specialized system partners that make every operation more efficient, more productive and more safe - from the delivery of goods to intralogistics.

In dialogue with companies from the food industry, KUKA has developed robots and software that help customers master the following challenges:

## 1. INCREASE IN PRODUCTIVITY

Robot-based pick, pack and palletize solutions can ensure replenishment around the clock. Night and weekend shifts do not jeopardize production, nor does the increasingly difficult search for skilled workers.

## 2. ERGONOMICS

Tasks that are particularly physically demanding can be delegated to a robot colleague, which protects the health of employees. In the DLG Trend Monitor Robotics 2023, more than 70% of 32 companies cited "easing conditions in the workplace" as the most important reason for using robots.



## 3. HYGIENE

Hygienic Machines and robots in the Hygienic Oil (HO) version are suitable for food processing in sensitive hygienic areas. Constructed according to hygienic design principles, they work with food-grade NSF H1 lubricants and have optimized cleaning options.

## 4. MONOTONY

Work steps that lead to lack of concentration and errors in humans can be carried out reliably by robots. This is also reflected in the DLG Trend Monitor Robotics 2023: 22 out of 32 companies cited improved efficiency as the most important reason for investing in robots.

## 5. STUFF SHORTAGE

More and more staff are migrating to industries with a lower risk of illness and injury. According to the German Economic Institute, there will be a shortage of around five million trained specialists in the food and beverage industry by 2030. As early as 2023, the 230,000 training places available could not be fully filled. Robots will fill this gap.

## 6. FOOD SAFETY

This is a combination of all monitoring processes that are dedicated to the safer preparation, handling and storage of food. The automation guarantees consistent quality thanks to the robots in the HO version, which meet all the requirements of the Machinery Directive 2006/42/EC and DIN ISO 14159 because of their harmless NSF H1 lubricants.

## 7. RELIABILITY

When machines break down, they often do so at an inopportune time: for example, in three-shift operation at night or at the weekend. With KUKA robots, a 24/7/365 service offer ensures that everything is up and running again within a short time.



Are robots only automating cheese?  
Not just that - they also know how to handle  
meat, fruit, vegetables and baked goods.

## Three high-quality ingredients

### Ingredient 1: ROBOT

What began at KUKA over 15 years ago in the food industry with depalletizing and palletizing robots soon expanded to the packaging sector since the packaging of products accounts for 40% of production costs there. At the same time, KUKA continuously developed a broad robot portfolio for the processing of raw materials and for all further steps up to the finished product. Today, the company offers robots for various food groups from A for apple to Z for zest.

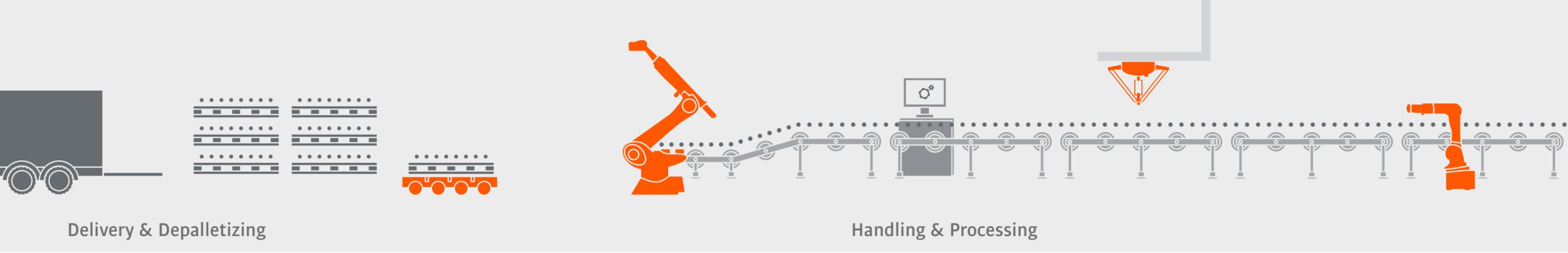
### Ingredient 3: SERVICE

With over 1,400 service specialists in 50 countries, tailor-made service contracts and employee training, KUKA ensures that fridges, pots and plates do not remain empty. Maintenance prevents malfunctions. If a robot does break down, help is available around the clock. Many faults can be rectified remotely thanks to the connection to the KUKA RemoteService Client. For others, a technician can be on site within two hours. KUKA also offers the best spare parts service on the market.

### Ingredient 2: SOFTWARE

Software solutions tailored to the needs of the industry contribute to the efficiency of the robots. KUKA.PickControl, for example, coordinates and synchronizes gripping and packing across several robots and work steps. KUKA.PalletTech is for those who want to concentrate on palletizing patterns and do not want to think about robot programming. The KUKA.PLC mxAutomation control software simplifies operation. This allows robots to be seamlessly integrated into an existing operating concept of the higher-level cell controller.





## Delivery & Depalletizing Complete Solution for the Food Industry

KUKA knows the challenges on the way from the field, plantation or farm to the ready-to-eat product. In cooperation with system integrators, automation solutions are created worldwide that everyone can enjoy.

### In Good Hands Right From the Start

According to the International Federation of Robotics, more than 113,000 robots were already working in the food industry by the end of 2022. Automation options are available from the moment raw or packaged goods arrive at the company. KUKA can transport pallets using driverless transport platforms from the truck to further processing. When it comes to depalletizing, the KUKA palletizing robots in the 40-to-700-kilogram

payload classes impress with their high speed and low dead weight. The KR 1000 titan moves extreme loads of up to 1,300 kilograms.

#### Ideal Software Solutions:

- KUKA.VisionTech for depalletizing,
- KUKA.AMR Fleet for autonomous mobile robots

#### CUSTOMER EXAMPLE:

### Cereal

**Robots Used:** KR QUANTEC PA, KR 300-2 PA

**Advantage of the Automation Solution:** Reduced workload for employees, doubling of loaded flour sacks

Since flour sacks in France are now only allowed to weigh 25 kilograms, Moulins Bourgeois has to pick almost twice as many sacks as before and send them on their way. Five KUKA robots and system integrator AB Process ensure that this works. The robots depalletize sacks of flour and place them on conveyor belts in the right order for the delivery route - up to 2,000 sacks



per hour. As part of a fully automated distribution center, they help to ensure that the mill supplies 170 tons of flour a day to customers all over the world.

## Handling & Processing

### Handling & Processing: A Hygienic Affair

Hygiene as Part of the Design: Particularly high standards are applied in food processing. Even disinfectants and chemical cleaning agents cannot harm the corrosion-resistant surfaces and stainless steel parts of the KR AGILUS and KR DELTA in the Hygienic Machine (HM) version. In particular, KUKA's robot portfolio in the Hygienic Oil (HO) version makes no compromises in terms of payload (available from 6 to 240 kilograms) nor in terms of reach, processing (robust, abrasion-resistant

paint finish) or safety. This is because all robot axes, including the energy supply systems, are equipped with certified NSF H1 lubricants to prevent potential contamination.

#### The Ideal Software Solution

- KUKA.PickControl for conveyor tracking with integrated image processing; coordinates gripping and packing across several robots

#### CUSTOMER EXAMPLE:

### Cheese

**Robot Used:** KR AGILUS HM

**Advantage of the Automation Solution:** doubling of production capacity with minimal cutting loss

A family brand with Dutch charm meets robot technology: at Vepo Cheese, two KR AGILUS HMs ensure that a block of cheese is turned into individually packaged cheese snacks. Together with system integrator Groba, the company has developed a fully automated production line that includes a dynamic weighing process and results in minimal deviation in the weight per bar. Vepo Cheese has doubled its capacity with the automation from 100 to 200 kilograms and thus from 5,000 to 10,000 cheese sticks per hour.



### Chocolate

**Robot Used:** KR AGILUS HO

**Advantage of the Automation Solution:** Precision in the hundredths of a millimeter range that cannot be achieved manually

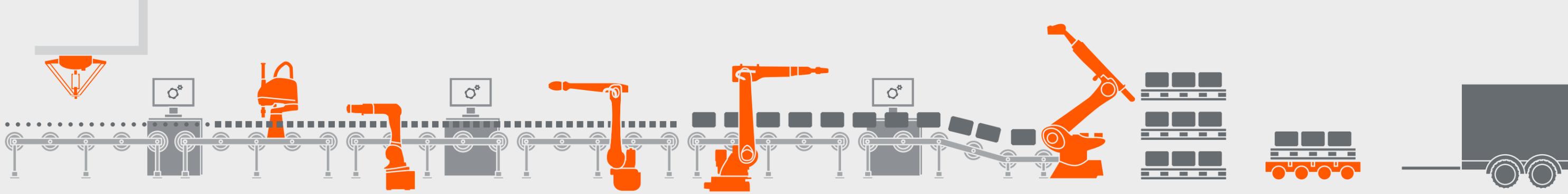
The Zotter chocolate factory in Bergl, Austria, attracts over 270,000 visitors every year. Since 2019, the world's first chocolatier robots from KUKA have been serving guests the finest chocolates here. They handle the temperature-sensitive raw mass with extreme precision and guarantee consistent high-quality products. In the future, Zotter wants to produce completely individualized chocolate in the spirit of Industry 4.0.

### Sausage

**Robot Used:** KR AGILUS HM

**Advantage of the Automation Solution:** 50% reduction in costs compared to the manual solution

The world's first automatic sorting system for natural casings comes from system integrator Proxima Centauri. The SelectiCa Sorter P1 relies on two KR AGILUS HM from KUKA. The trio operates completely autonomously from loading the casings onto the caliber measuring station to detecting holes to cut to unloading the sorted casings.



## Pick & Pack

### Pick & Pack: Take Bold Action

From KR AGILUS and KR DELTA to KR IONTEC and KR SCARA, from 3 to 70 kilograms payload, from HO to HM: if you are looking for solutions for the automation of pick-and-place and packaging applications, KUKA has robots for every taste and for all installation positions. These robots work cleanly and quickly. For example, the high-speed KR AGILUS reduces cycle times and increases production quality without ever falling out of line.

#### Ideal Software Solutions:

KUKA.PickControl for 2D and code object recognition and quality control,  
KUKA.ConveyorTech, which automatically adapts robot movements to the flow and conveyor belts

## Palletizing & Distribution

### Palletizing & Distribution: Fast and Secure Delivery

The delicacies are packaged while customers such as bakers, butchers, retailers and restaurants wait for them to arrive. Now KUKA robots ensure that everything arrives safely. The same robots are suitable for palletizing as for depalletizing (see page 6) such as the KR QUANTEC PA family. These include robots specially designed for cold stores (KR QUANTEC PA Arctic) and robots with NSF H1 lubricants (KR QUANTEC PA HO). Mobile platforms also ensure ideal material handling in dynamic environments and enable innovative goods-to-truck solutions.

#### Ideal Software Solutions:

KUKA.PalletTech for mono-palletizing,  
KUKA.AMR Fleet for monitoring and coordinating the entire transport fleet,  
KUKA.FlexPal for complex palletizing/depalletizing tasks, single-variety or mixed

#### CUSTOMER EXAMPLE:

### Baked Goods

**Robot Used:** KR CYBERTECH nano

**Advantage of the Automation Solution:** Accurate counting, reduced labor costs, increased safety

With the KR CYBERTECH nano from KUKA, system integrator Niverplast has implemented a fully automated pick-and-place line. The advantage of this type of robot is that it is so maneuverable, flexible and has such a long reach that it is also adaptable in confined spaces. Using special tongs, six robots in the line pick baguettes and pack them into boxes. They are supported by a camera system that determines the exact position of each baguette on the conveyor belt, just like an expert game of Tetris. The system counts the baguettes, uses a safety check to detect whether there are any foreign objects (such as small metal parts) in the baguette and sorts out the affected pieces.



### Beer

**Eingesetzter Roboter:** KR QUANTEC PA

**Advantage of the Automation Solution:** Support for physically heavy work, more sensible use of skilled workers

At the private brewery Christian Fiedler in Oberscheibe, Saxony, a 5-axis KR 180 PA from the QUANTEC series palletizes the heavy crates of beer and incoming and outgoing goods. This not only makes physically strenuous tasks much easier for the employees of the small family business, but also gives them new opportunities to make better use of their skills in other areas.

#### CUSTOMER EXAMPLE:

### Meat and Meat Substitutes

**Robot Used:** KR QUANTEC PA HO

**Advantage of the Automation Solution:** Enable the processing of live insect larvae

ENORM Biofactory in Denmark uses the precision and power of hygienic oil robots from KUKA to produce a climate-friendly source of protein from the larvae of the black soldier fly. Scandinavia's largest and first commercial insect farm



produces highly digestible protein feed for animal husbandry. The robots from KUKA move, stack, empty and fill the heavy boxes with the larvae and their feed.

### Herbs

**Robot Used:** KR QUANTEC PA Arctic

**Advantage of the Automation Solution:** Employee protection, saving time and costs

Two KR QUANTEC PA Arctic robots palletize packages of frozen herbs at minus 25 degrees Celsius, relieving employees of strenuous work in the cold. The KR QUANTEC PA Arctic is the only robot in the world that can work in such low temperatures without an expensive protective cover or heating of the robot arms. KUKA and the system integrator AB Process created a solution that makes 6,000 pallets ready for delivery in 36 hours. Darégal is delighted with the convincing price-performance ratio and satisfied staff.



# World Robotics Report

## A Taste of the Future

The global mark of 700,000 newly installed robot units per year is expected to be reached in 2026. This is predicted by the International Federation of Robotics (IFR) in its World Robotics Report 2023. Sales of robots that work in open indoor spaces with public traffic have recently seen particularly dynamic growth. According to the IFR, the number rose by 78% to almost 37,300 units sold in 2022 alone and the trend is likely to continue. Many of these robots are used to deliver food and drinks in restaurants.



Our entire robotics range for the food industry can be found on [my.KUKA Marketplace!](#)

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