



No walking on egg-shells thanks to CKF Systems

CKF utilises the latest in robot palletising technology to safely pack fresh eggs

Robot palletiser increases throughput and reduces costs

CKF designed, manufactured and installed a cutting-edge egg packing and palletising systems for one of the country's largest egg suppliers at two of their sites. The systems have proved themselves already by running smoothly and dramatically improving our customer's operations. Our customer is a long-standing and major supplier of eggs to many of the UK's leading supermarkets and CKF were commissioned to automate their packing in order to reduce the number of eggs that were damaged, increase throughput and reduce the amount of manual handling involved, reducing costs and increasing safety.

Expert packing and handling of fragile products

The new system was installed into their existing moba out-feed egg-packing system which fills cartons of various sizes and materials and closes their lids. This previously fed the eggs to a manual packing station. The new system feeds the filled and closed cartons onto the out-feed conveyor – the set-up of which is determined by their current production requirements.

The solution includes a vision system which verifies that the use-by date has been included and that the lid is closed. If the lid is not closed or the date is incorrect or missing, the product is rejected and sent to the reject conveyor for removal. Automating this process means faulty product is removed swiftly from the line, preventing it reaching the customer and ensuring the quality of the end product.

If the product passes the test then the egg carton is transferred onto the collation infeed conveyor unit which transfers and orientates the product correctly ready to be conveyed to the box splitter unit.

Where two packs of 6 egg cartons are joined and need to be split, the box splitter unit is used to split the cartons using a blade without damaging the eggs. The box splitter can cut both pulp and plastic cartons which offers versatility to our customer who have many different customer requirements they need to meet.

The solution has a product spacing unit which uses pneumatic stop gates to ensure there is a set amount of space between the cartons of eggs or group of egg cartons to allow for pack orientation or for repositioning into the correct lane.

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We encountered a number of issues through the planning and implementation of this project due to the variety in pack materials. Different materials behave differently on the conveyors, the system being able to handle different materials was absolutely vital so we utilised a combination of belt materials and surface textures to overcome this issue. We are used to working with a variety of different customers, all with unique requirements and we have the technical expertise to be able to adapt our systems to meet their needs ”

Chris Young
Project Engineer, CKF Systems

Palletising the egg cartons

A low back pressure chain roller conveyor moves the egg cartons through to the robot sorting collation conveyor. The sorting modular belt conveyor encoder is used to track the cartons positions, enabling the sorting robot to reposition the packs thus creating the required collation.

The system utilises an ABB IRB1200 sorting robot system which is programmed to arrange the cartons of eggs into specific patterns on the sorting modular belt conveyors as required by the packing robot. The type of carton and the type of container the cartons are being packed in determine the collation pattern the cartons are placed in by the sorting robot. Once the cartons are positioned on the sorting modular belt conveyors, they are transported onto the collation conveyor unit.

The cartons will be correctly orientated by the sorting robot. If the carton spacing isn't what's required by the packing robot then a collation servo unit uses pneumatic stops to ensure the correct number of cartons with the right spacing is fed onto the conveyor ready to be picked by the packing robot. There are two available product streams providing versatility in the pattern available for the packing robot. The type of carton and the type of container the cartons are being packed into determine the number and pattern of the cartons.

Making sure the nation has fresh eggs

Once the egg cartons are grouped in the required pattern the robot will pick the group of egg cartons from either stream and place them into the selected container for that specific production run. In the case of shipper / bulker containers, they are then removed by a forklift so they can be transported to the supermarket ensuring that customers have unlimited access to fresh eggs. Alternatively, if cardboard display cases are being packed, once full they are automatically discharged from the robot cell via a conveyor system and transferred for palletising.

Statistics show that that 36 million eggs* are consumed per day in the UK showing that this versatile food item is a loved and staple part of the UK's diet. CKF were delighted to work to help ensure the Nation continues to receive its eggs in one piece!

* The UK egg industry info produced by British Lion Eggs <https://www.egginfo.co.uk/egg-facts-and-figures/industry-information/data>

