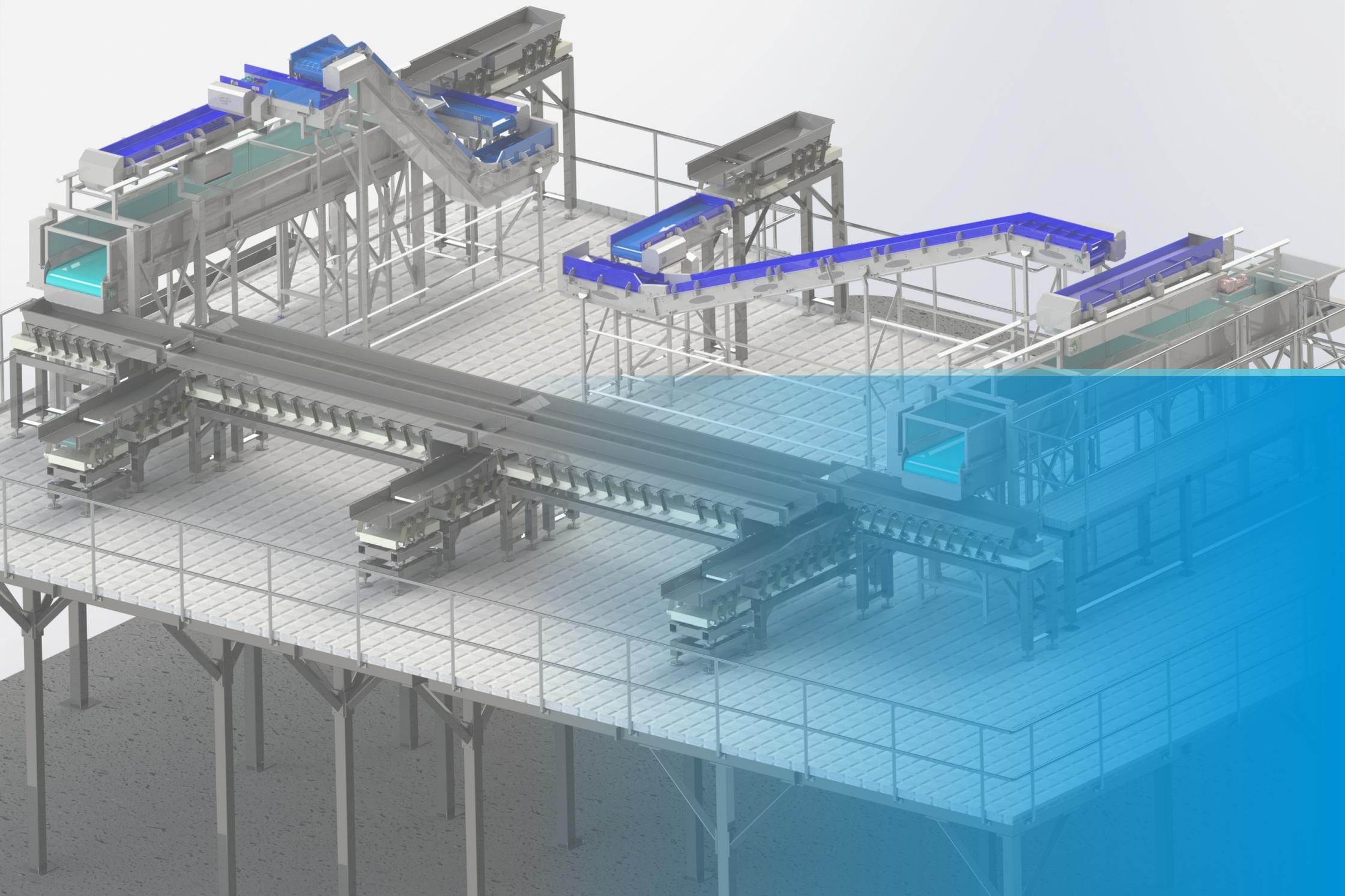


**COX &
PLANT**





Why
Choose Us

Cox & Plant have been making vibratory conveyor systems since 1973. Our multinational business boasts machinery in six of the seven continents across the world. Adding value to your business, most of our clients see a return on their investment within 12 months.

At Cox & Plant, we treat every project as the start of a long-term working relationship. We're open, we're honest, and we're committed to meeting and exceeding your expectations. We are market leaders and deliver innovative systems which are setting new standards in the food processing industry.

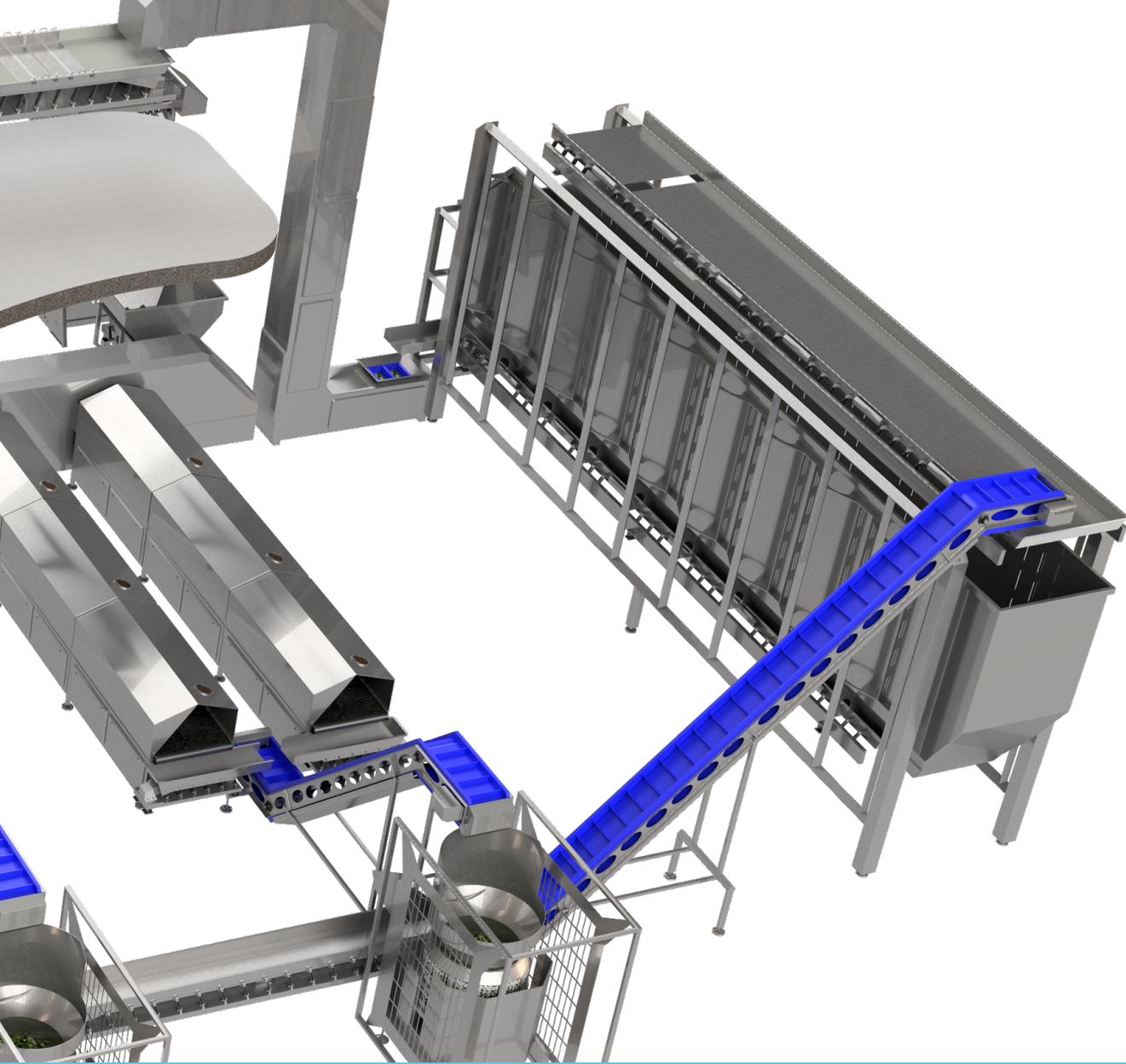
Though we specialise in vibratory conveyor systems we can provide consultancy from initiation through to completion. We have the ability to complete 3D design modelling, factory surveys, feasibility studies, as well as installation and commissioning.



“ We have really focused on bringing customers to the forefront of our internal processes and external outputs so that they are the core focus of everything we do. We work as one team and see ourselves as your strategic partner to deliver the best value for your business.

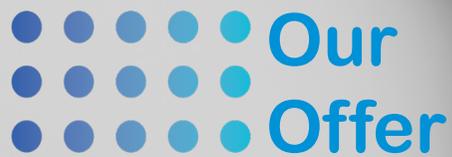
We have seen an increase of repeat customers and recommendations, which now makes up over 80% of our business. This proves the level of trust and confidence our customers have with us and the level of service that they receive.”

Andrew Cox—Managing Director.



Return on Investment

The essence of our business is value not price. In a price conscious world run by financials every project is fully costed out and provides a solution for your production capacity, operational inefficiencies and other day to day running costs that impact production levels. Our aim is to work with you to produce a customised, realistic and quantifiable ROI (return on investment) report which will show you how many months it will take and where the savings will be achieved. Most of our clients see a return on their investment within 12 months.

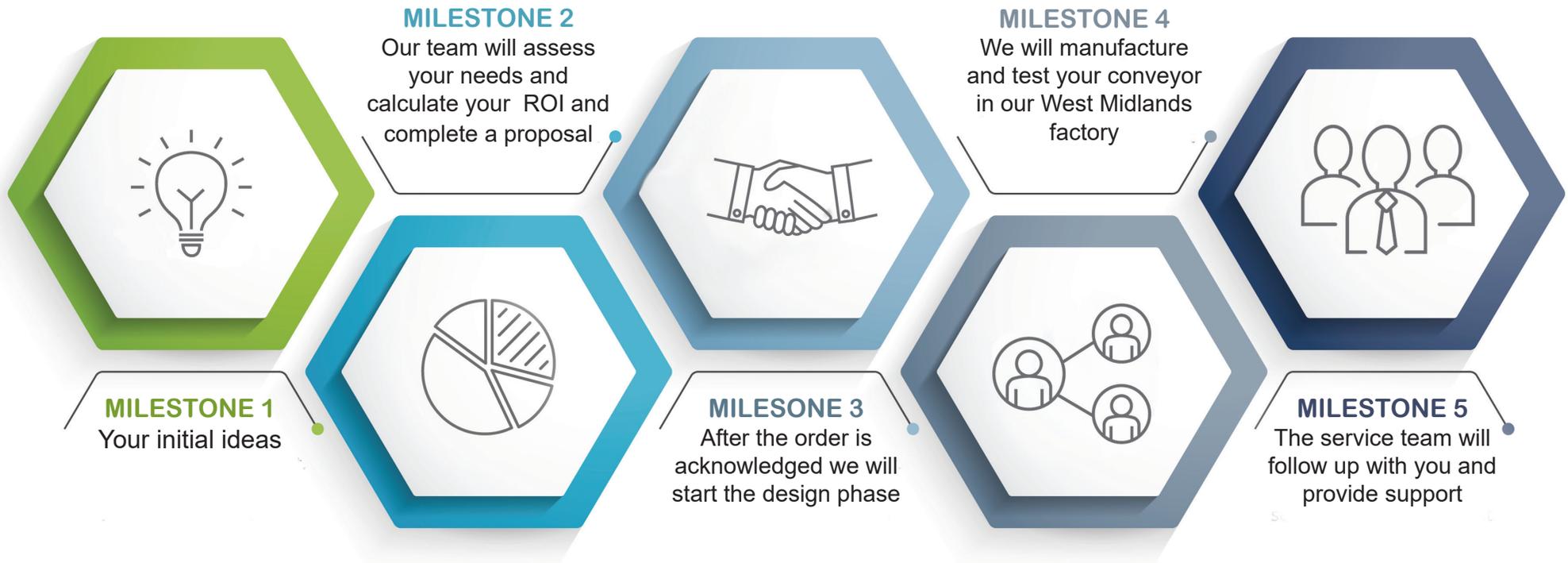


Making Your Factory More Efficient

We can complete efficiency studies for your food production line and provide you with a full report of our recommendations for the optimisation of your facility. As we approach our 50-year anniversary we continue to evolve, and our ethos is to share our wealth of experience and knowledge with food processing factories across all sectors. We work on giving your business the most value for your production lines.

Your Strategic Partner

We see ourselves as your key partner, so we don't initiate any relationship with pre-existing assumptions or off the shelf solutions. You will receive detailed analysis, reports and focused recommendations when you work with our team. Each organisation has a unique history, mission, vision and market. We take the time to learn your business inside and out as you are the experts and only you can tell us your story.



●●●●● Your ●●●●● Factory

Research and Development

We design, manufacture and build in our factories based in the industrial heartlands of the West Midlands. As part of our work we take Research & Development seriously, working in partnership with the experts at the MTC (Manufacturing Technology Centre) and Warwick Manufacturing Group on campus at Warwick University to bring you the latest in technological developments. Embracing IR4.0 and LEAN manufacturing as well as our fully integrated seamless intranet, allows for a very customer focused style of approach which all colleagues in the business have adopted. We can create any ideas that we believe are feasible, so we will develop the solution which we can then test in our factory. Our dedicated team will bring your ideas to life.

Project Management

A dedicated project manager will be allocated to you, to get to know your business so we can provide the premium levels of service that you have come to expect. Our approach is to be open, honest, reliable and we are not afraid to challenge you to get the best results for your business. Put our knowledge and expertise to the test and ensure your production lines are the best investment you have made to date.

Online and Offline Mixing Solutions

We can provide different types of bulk handling mixing solutions, specifically online and offline mixing solutions to benefit your business.

The Background:

We design and manufacture flexible customised mixing lines for your business, and we can create lines with high throughputs, with the product flow measured and controlled.

The Challenge:

The biggest challenge is the misconception that high accuracies can only be achieved by a CCW, but this is not always the case.

Our Solution:

The benefit of an offline batch mixing solution is that your main packing lines can continue to run whilst a batch mixing operation continues offline. This allows stock to be built up for short run SKU's which have been premixed saving time and energy and can be decanted directly into a packing line.

Alternatively an online continuous flow mixing system for feeding directly to your packaging lines. This will improve your efficiencies due to the eradication of double handling. Both of these solutions will give you accuracies as tight as +/- 1% which has been achieved by some of our clients. It is the ideal solution to remove short runs.

We offer 2 alternatives of mixing methods, automated and semi-automated. Semi-automated relies on manual adjustment of the hopper discharge gates which are calibrated to the individual product bulk densities. It is essential that we calibrate this system at onsite commissioning in order to enable the best accuracies to be achieved.

Automated systems utilise a second vibratory conveyor which acts as a loss in weight flow control with continuous feedback to the load cells as the product weight passes over the conveyor surface. This allows the system to automatically adjust conveyor speeds to achieve the exact accuracies of the mix required regardless of potential surges or starvations in product flow. We always recommend a "Cluster Buster" if the product is suitable to alleviate block frozen clusters.

The Results:

Offline Mixing: In 2 of our case studies, based in Eastern Europe from installation 20 years ago, both sites respectively achieved a billion tonnes of mixed frozen product within 7 weeks of each other in Spring 2015. One site produced accuracies of 0.8% and 1.2% on the other site. The value of this solution in monetary terms was a 40% total cost an on-head (CCW) mixing weigher solution. The project delivered ROI within 26 weeks.

Online Mixing: Originally the line was supplied as "inflight" to allow for immediate packing and minimising the product standing in an ambient environment. An additional mixing line for fruit then became the live "inflight" packed product and the original line went to bulk for either cold storage or moved automatically to repack lines which were fed from the palletainers. This allowed the client full flexibility to batch store, minimise change overs and operate a just in time packing requirement on demand. The ROI for this line was 11 weeks. 10 years after this line was installed with a £1M investment, the legacy moving forwards is the ultra-low cost of ownership which to date is still under £10,000.

Optimised Feed to Multihead Weighers

In our experience optimising the feed to a multihead weigher can lead to the fastest return on investment in the industries we work in. 12-16 weeks is the typical amount of time but we have achieved ROI in only 19 days.

The Background:

Multihead weighers use a number of different weigh heads to generate precise measurements of products by calculating the weight in each weigh head. Each weigh head has its own precision load cell. The weighing process begins when product is fed into the top of the Multihead Weigher. Optimising the flow of product to the dispersion table is critical to maximise the accuracy of the multihead weighing process.

The Challenge:

Generally there are 2 feed systems onto the dispersion table which are currently in use across the industry which are vibratory and belt conveyors. There are several issues which arise from feeding a multihead weigher directly with a belt conveyor including even product dispersion across all weigh hoppers, which has a detrimental effect on the multihead weighers overall efficiency. Belt conveyors are not responsive enough to evenly spread surges of mass product when the dispersion table is full. This leads to overfeeding of the multihead weigher, which hinders the ability of the machine to produce an accurate weighment and often leads to significant amounts of giveaway of product.

Our Solution:

Improved production efficiency can be achieved through the use of a vibratory cross head feeder. Through extensive trials over the last 32 years we have proven that by feeding a multihead weigher with our peripheral discharge (circular), which is designed and constructed to get a perfect 360 degree feed to the dispersion table on the top of the multihead. This in turn allows the software to run the perfect algorithm which is typically 4/5 weigh heads. Our system harmonises the infeed speed to the multihead weigher by tracking the run times which then automatically adjusts the speed of the conveyor.

The Results:

7 different product sectors were trialled to achieve 100g or 500g bag weight accuracy for two different typical bag weights. The following results were consistently achieved

Feed Mechanism	Synchronisation	% Accuracy of Target Weight
Belt Feeder	NO	79%*
Vibratory Straight Edged Discharge	YES	92.3%*
Cox & Plant Spigot Cross Head Feeder	YES	97.8%*

The % of bags that were within target range

*Verified by a check weigher

Freezer and Fryer Infeed

We have the perfect solution to feed your freezers and fryers in the harshest of environments.

The Background:

Our optimum solution for feeding products into freezers / fryers is proven to deliver return on investment typically within 20 weeks. The Cox and Plant system has been designed to have virtually zero operator intervention except via a remote HDI interface panel.

The Challenge:

The biggest issue with feeding freezers and fryers is creating a constant and consistent mono layer of product.

Space is a premium in most food factory's, so our systems are compact and efficient with a concise footprint to ensure that the fryers or freezers are always fed efficiently and well optimised.

The Solution:

Our solutions can feature a step in the conveyor tray as well as a scarfed discharge to aid product separation.

Evenfeed Conveyor: From the design and construction of an evenfeed conveyor we are able to receive product from a narrow infeed point and discharge uniformly onto the much wider freezer / fryer infeed belt.

Vibratory Inspection Conveyor: This conveyor enables operators to visually inspect the product and manually remove inferior product into the reject channels without having to look away from the product stream.

The Results:

As we can provide a monolayer of product we can improve the efficiency and quality of the product after the freezing and frying processes.

Distribution Systems

The main objective is to receive product from a single source and distribute to multiple discharge points such as multihead weighers.

The Background:

Distribution systems and cross head feeders (CHF) are usually an afterthought, however, ROI can be achieved in as little as 6 weeks. The conveying equipment and the feed to the CCW multihead is critical for accurate weighments and minimum product giveaway. We can also address line priority resulting in zero downtime or starvation of product.

The Challenge:

The biggest challenge of a distribution system to ensure that there is no line starvation and all individual branches are consistently and constantly fed. This will ensure that all baggers and CCWs are running at optimum efficiency and productivity.

Options include on the head flavouring for more bespoke specialist facilities where each individual line would require its own unique individual flavour.

Our Solution:

The line methodology logic from a design concept is similar to effective traffic management on a smart motorway. Product flows through the main line distribution conveyors where each of the "junctions" can be called from the CCW multihead weigher to deliver product. This ensures no starvation and all the multihead's are replenished on demand with ready to pack product.

Customised options include pneumatic gate options (sliding, pivot and quadrant) where product falls below onto the CHF. For lighter products such as cereals or snacks our gateless flow management system is ideal when height is a restrictive factor.

The Results:

After 5 decades in business our systems are tried and proven throughout the world, we always recommend accumulation / buffer storage to act as a reservoir to ensure the line is primed with product and accommodates the voids and surges in batch processing. Our systems are supplied with PLC controlled HMI panels with security levels of entry to ensure not only do you maximise production, metrics and trends can also be analysed shift by shift and hour by hour.

Grading, Sizing and Collaborating Conveyors

We can manufacture customised single, double and triple deck linear conveyors so we can grade various different sizes on the same conveyor at the same time.

The Background:

With increasing customer demand, it is essential that you deliver a consistently excellent product to the market. With our grading conveyors you don't need to interrupt the flow of your production line.

The Challenge:

To be able to sort by multiple sizes of a particular product on an inline conveyor, so the products can then be processed onto the next production stage.

Our Solution:

One of our key design features is our durable quick release clamps for the top deck which hold the screens in place. This feature allows operatives to quickly remove the screens if they need to change or clean them.

The Results:

As there are minimum parts, there's less to replace so the ROI is typically a matter of months. Also, as there is no disruption to the line the productivity increased.

This solution delivered consistency across the product range and achieved a rigorous standard of quality control and customer satisfaction.

Seasoning System

Our loss in weight feed system accurately weighs and controls the flow of variable products either, continuously or as a batch depending on your requirements.

The Background:

The concept below is primarily based around the application of a weigh system associated to PLC control. Whilst the weigh function is at the heart of any loss in weight system it does not directly impact on the material flow.

The Challenge:

Automated systems utilise vibratory conveyors with flavouring / seasoning drums which gently tumble, improving coverage and uniformity. Each flavouring drum is designed product dependant e.g. potato chips or extruded fried product have very different flavouring requirements resulting in less flavouring fall off. Residual times in the drum are critical to ensure a consistent and high-quality product.

Our Solution:

The loss in weight hopper contains the seasoning, which discharges via a metering screw feeder. This results in the hopper weight gradually falling. Any difference in the slope of the pre-set weight against time and the actual, is fed to a process controller and used to speed up or slow down the seasoning feeder. If the weight against time is below the pre-set level the metering feeder is locked onto it's last average speed and the filling valve opened again, rapidly filling the hopper. This system consists of the following equipment:

- Vibratory conveyor mounted on a load cell platform
- Metering screw feeder mounted on a load cell platform
- Scarfed vibratory tumble drum feeder
- Tumble drum
- Menu driven touch screen PLC control panel

The Results:

The loss in weight feed system has been designed to weigh and control the output of variable products continuously to weight accuracies of $\pm 0.25\%$ to $\pm 1\%$. Applications include dry powdered seasoning, slurries, oil-based coatings and multiple flavours e.g. oiled then flavoured nuts.

Our Products

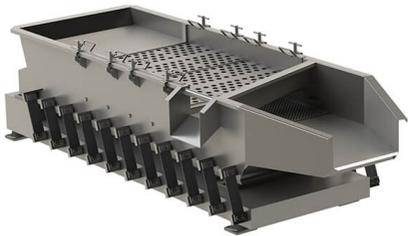
Metering Conveyors



With no starvation of product metering conveyors create a consistent flow of produce to boost the efficiency at the start of the line.

- Ideal when you need to control the input as it regulates the flow of product
- Vastly improve the efficiency of your downstream equipment
- Keeps production lines primed product

Grading Conveyors



Whether it's fines removal & slithers, broken, oversized, undersized, different fractions or otherwise unsatisfactory products, grading conveyors are there to separate the good from the bad, large from small.

- Automate your food sorting process and achieve a rigorous standard of quality control

Vibratory Conveyors



Superior to belt conveyors as they more efficient, have virtually zero maintenance, they are energy efficient and outstanding levels of hygiene.

- Superior to conveyor belts as you don't need to replace the tray
- ROI is easily achieved due to the low maintenance and longevity of the machines

Cross Head Feeders



Synchronising with Multihead weighers, cross head feeders are used to consistently distribute products into weighing machines CCW.

- Rapid and frequent stop/start capabilities
- Your products arrive at the right time and the exact quantity
- Prevents avalanche, overfeed and starvation

Laning Conveyor



Laning conveyors effectively orientate and lane your products.

- Reduces blockages on your food production line, reduces wastage and makes packing easier

Optical Sorter Infeed and Outfeed



A critical element for an optical sorter is a consistent flow of mono layered products.

- Reject conveyors can be provided
- Multiple grades of products i.e. A / B / C / or D; can be segregated for either bulk storage or inflight for further processing or direct to the packaging hall

Evenfeed Conveyors



Evenfeed conveyors are used to create a consistently even spread of products before they reach the next food processing stage.

- By feeding at 90° angle to align a mono layer of product to the downstream next stage i.e. Optimises freezers / fryers / dryers / roasters / coolers reducing energy costs in addition to higher quality end product
- QA is made far more efficient by inspecting a monolayer either manual QA inspection or infeed to an optical laser sorter

Silo Discharge Conveyors



We can manufacture any size conveyor to suit your silo specification.

- We can provide our silos as enclosed, offset, single and split
- We can combine them with hoppers or with another section of your food production line

Vibratory Storeveyors



A vibratory storeveyor is a combined storage conveying system.

- Stores your products between processes
- Allows flexibility for intermittent storage requirements and maintains a consistent supply of product on your production line

Bulk Bag Infeed



Our systems can be fully integrated and customised to suit your exact specification.

- Our designs can incorporate all types of storage requirements
- With our high-powered metering conveyor throughputs can range from 100kgs to 10 tonnes an hour

Bulk Storage Systems



We can design and build bulk storage systems to suit your every need whether its size, needs to have a cooling requirement or your produce needs to be kept dry.

- We can build our bulk storage systems to meet your needs
- We can keep your produce cooled or dry
- A paddle innovation option can be customised to keep product aerated and largely alleviate clumping

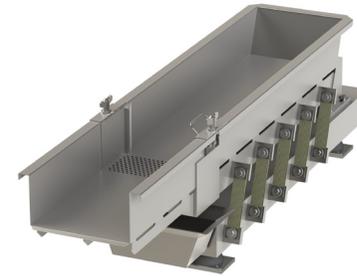
Hoppers



Our hopper is a special storage container that will carefully and steadily dispense your granular materials which will prevent your production line from getting overwhelmed.

- Achieve a uniformed flow of products and steadily dispenses your granular material

Feeder Conveyors



Feeder conveyors make production lines more efficient and easier to control.

- Low energy use and low cost of ownership
- Variable speed

Settling Conveyors



Settling conveyors restore your products from a chaotic jumble into a neat and ordered layout as intended within the outer cardboard box.

- Quickly settle products ready for final sealing of packaging boxes
- Reduce non uniformed bags that don't 'lie comfortably' in their outer packaging
- Settles loose and packed products for robotics and automation downstream i.e. robotic case packers
- Alleviates air gaps / spaces and gaps

Inline Metal Detector



Quick and easy inline metal detection with our wrap around metal detector and polypropylene and stainless steel conveyor.

- Polypropylene and stainless-steel construction
- Extremely high adaptability for any product to be inspected
- Reject gated conveyor and take off conveyors can be accommodated supplied as a complete system

Incline Conveyors



Our innovative incline conveyors revolutionised the industry - so imagine what they'll do for your business.

- Moves your products up and down varying levels of the factory, we appreciate not every factory is on one level
- We developed the world's first vibratory incline conveyors capable of achieving an 18° angle
- When bagmaker and CCW Multihead stack up heights eat up the height, C&P can come to the rescue with inclined CCW Vibratory Feeder Conveyors

Inspection Conveyors



Inspection conveyors evenly spread your product to ensure that nothing escapes the careful eyes of your quality control team.

- Dispose of unsatisfactory produce using the reject trays and chutes

Cluster Busters



Cluster Busters will individually separate your frozen products to allow for more effective processing making IQF quality achievable post freezing easier to achieve.

- Allows for accurate weighing and inspecting

Glazing Conveyors



Glazing conveyors add that little something extra be in water or oil to your frozen produce by improving the appearance of deep frozen products.

- Interchangeable stainless-steel wedge wire screens and oils & flavourings can be incorporated
- Vastly prolonging the products' freezer and display life
- % glaze can be variable typically between the ranges of 1% to 40%, product dependent

Screening Conveyors



Separate your good products from the rejected broken and fines created as the products pass through the line.

- Does not slow down your production line
- Assists by capturing and removing debris from the product stream
- Keeps CCW Multi heads cleaner keep efficiency levels high

Swan Neck Conveyors



Swan neck conveyors allow you to make the most of your available space without compromising on speed, efficiency, or safety.

- Ideal for fragile and delicate food produce
- Improve product line efficiency
- Available in almost every conceivable configuration

Spiral Elevators



Split your food production line across multiple levels with our vibratory spiral elevator, save space and boost efficiency.

- Options to heat and cool the product
- Incline & decline models
- High ranges from 1200mm to 6500mm height
- Multiple lane and discharge options available

De-Oiling Conveyors and De-Watering Conveyors



De-oiling conveyors are an essential part of the process after the fryer, where oil is often used to rapidly yet effectively cook an array of foods.

- Speeds up production and can gently turn your product
- Reclaim the oil to be fed directly back into the frying process
- Simultaneously acts as a screener as an added benefit

Bucket Elevators



They make it possible to move your food produce between different levels on your production line.

- Gives you the ability to have your production line on multiple levels
- Does not compromising on speed, efficiency, or safety
- C / S & Z models available to suit your specific needs

Belt Conveyors



They still have their place on an advanced food production line.

- Can fulfil functions that other conveyors can't
- Food grade belt and stainless steel frame

Gated Conveyors



Gently and quietly move your products from one stage of processing equipment to the next.

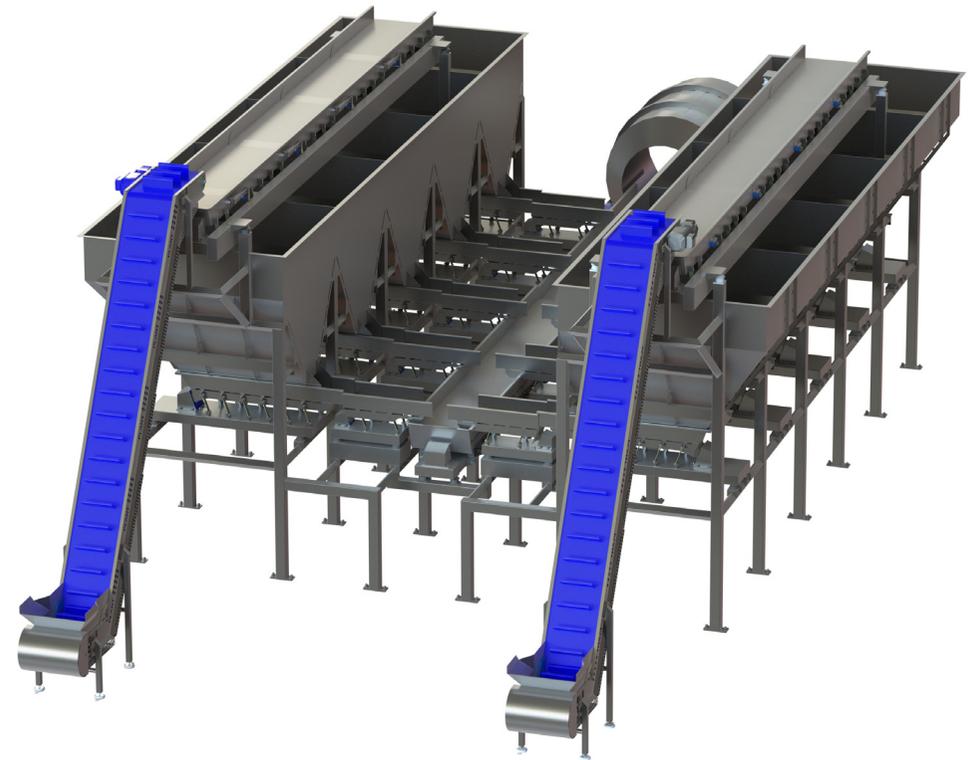
- Move huge volumes of food product with minimal damage
- Quiet and compact conveyor
- Allows hoppers / silos or bunkers to be fully primed
- Ideal for storeveyor loading on first in, first our principal to keep product fresh

Tubular Conveyors



Tubular conveyors are a simple yet supremely effective means of safely moving potentially hazardous substances.

- Built for granular or powder products
- Keeps your product secure and encased
- Reduces air born particles and minimises waste



Lift and Tip Units



Bulk handling in the food processing industry can be a very labour-intensive process which can affect the productivity of your production line, this is where our lift and tip units can benefit your return on investment. Our tippers move product with minimal physical involvement and as only one bin is used it can be washed at the end of each process.

Our lift and tip units accommodate tote bins, euro bins, octobins, palletainers, drums and Dolav's have been specifically designed for food production and the pharmaceutical industry. The lifter is constructed from grade 304 stainless steel to IP65 standards, easy to hygiene with a low cost of ownership. Our tippers hold a variety of standard sizes and designs, as well as accommodating non-standard container types. Customised advanced tipping action options can be added which will prevent your product from sticking in the drum.

Our customers can specify column heights to suit their factory which will discharge at any height with a chute that can be included to prevent spillage. We recommend that above a tip height of 2500mm from the bin, the machine should be bolted to the floor and braced near the top. To make the most of your factory space we can accommodate both straight sided trucks (large internal capacity) or tapered mobile trucks (can be stacked to optimise space) and we can integrate lifting sleeves or forklift pockets.

As safety is incredibly important to us, we have a range of safety features including:

- Mechanical drum retention
- Fully enclosed design
- Mechanical container retention
- Interlocked guarding

These are all designed to maximise the safety of your staff. We can also incorporate a variety of guarding options from full guarding to skeletal guarding based on your specification inline with British Standard PD: 5304. Our lift and tip units have push button, inch by inch tipping as well as and remote-control start options as well as low voltage and flameproof alternatives.



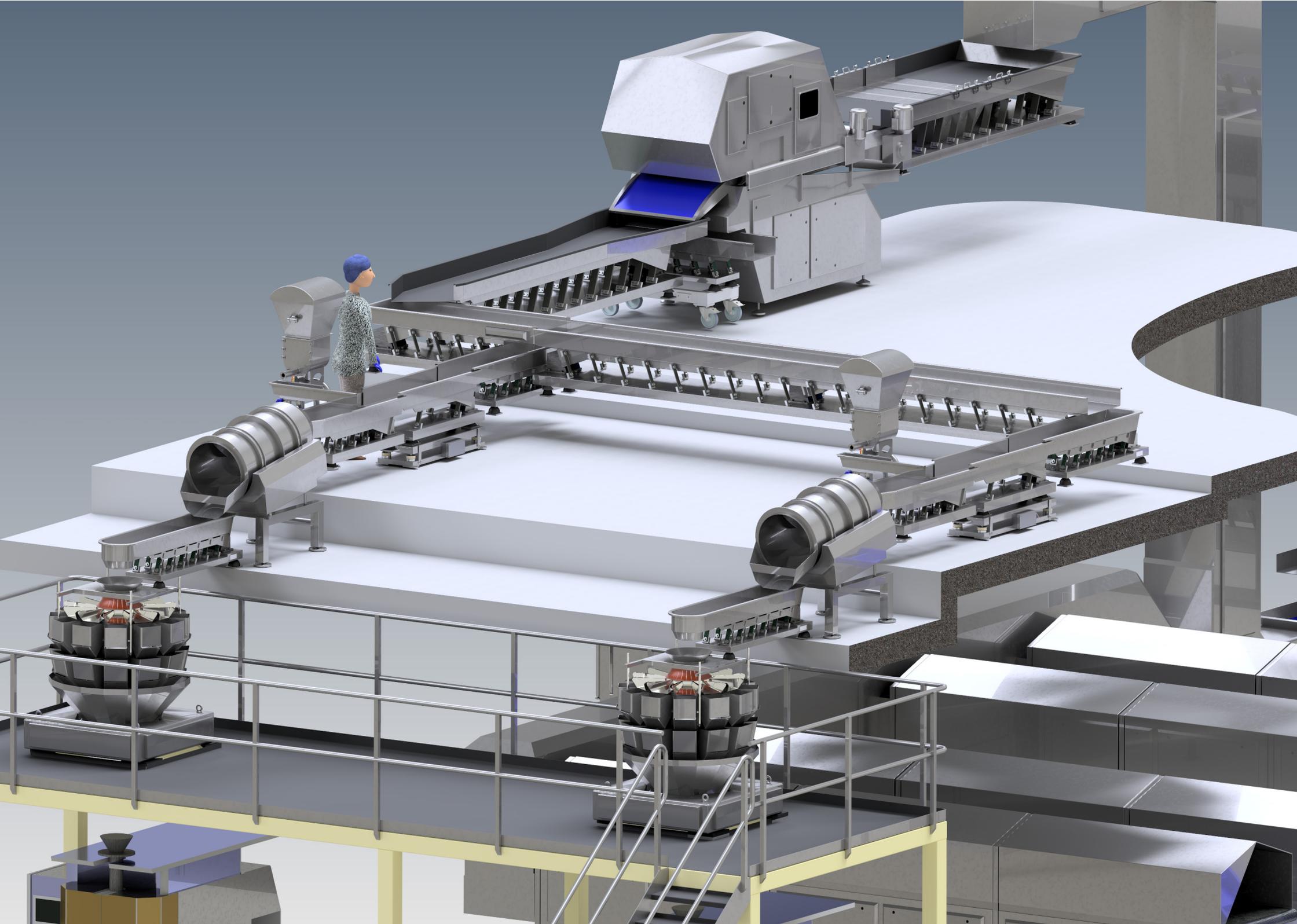


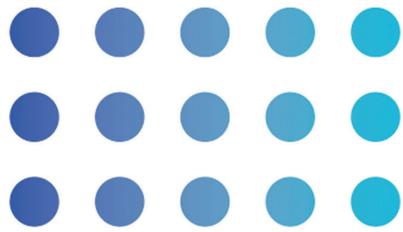
Industries We Work With

- Cereals
- Cheese
- Confectionary
- Contract Packing
- Frozen and Chilled Food
- Fruit and Vegetables
- Granular and Powders
- Meat, Fish and Poultry
- Pasta, Rice and Pulses
- Pet Food
- Pharamceuticals
- Plastics
- Salad
- Snack Food
- Tobacco

Service Plan

Even the best technology will only work optimally when it is maintained regularly and properly. Our service plans detail the operating procedures and maintenance you will need to follow to assure your machinery is in full working order and the warranty will be valid. The Cox & Plant service packages enable you to choose the best fit for your organisation. We don't use contractors, so you will get Cox & Plant conveyor experts at a time to suit you.





COX & PLANT

Monument Works, Balds Lane,
Stourbridge, West Midlands,
United Kingdom, DY9 8SE

+44 (0)1384 895 121

hello@coxandplant.com

