



Conveyors & Automated Handling Solutions

Optical Lens Conveyor Systems



MONK Conveyors Limited

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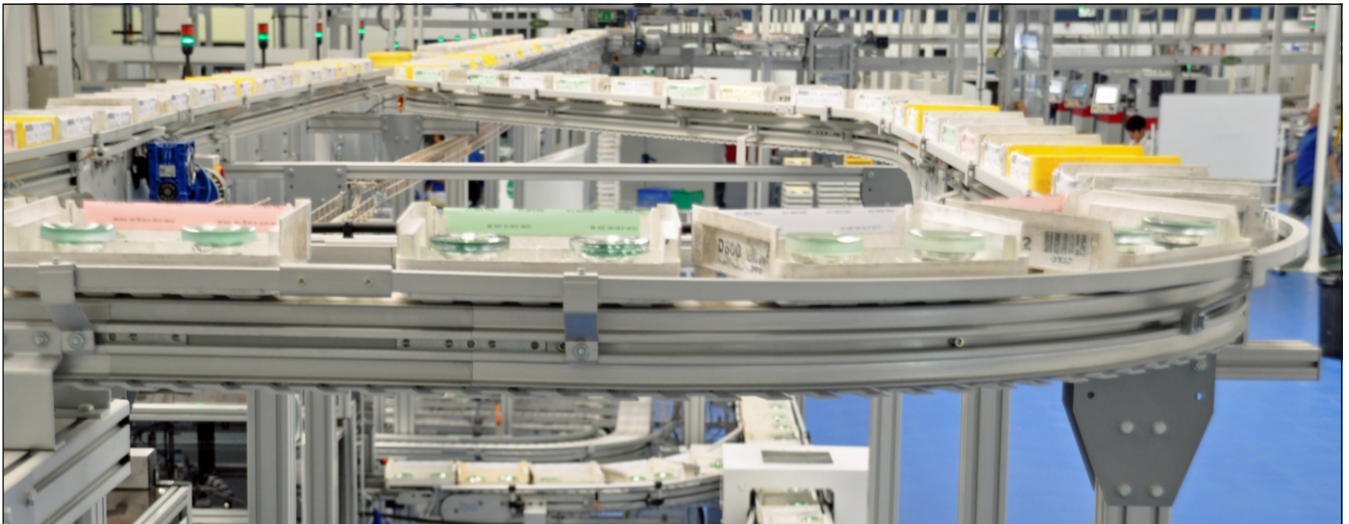
Visit our website at: www.monk-conveyors.com

A Private British Engineering Company





Optical Lens Conveyor Systems



Monk Conveyor systems have been moving job trays around labs for more than 18 years via our optical lens conveyor, and we have established ourselves as a leading company in the optical industry with installations around the world.

“Improve efficiency of your optical lab with an automatic conveyor feed system for your job trays. Our systems are designed to ensure that every processing machine is kept continuously fed with work”

The design of our optical lab conveyor systems take into consideration your machine capability, site capacity, available footprint and people integration. Bespoke optical lens conveyor systems fitted with your requirements will be proposed. We offer small systems through to full factory installation which feed job trays through many processes within the lab.

Our optical lens conveyor systems are stand-alone and work with many different processing machines. This benefit provides you the freedom to choose processing machine suppliers and gives the ability to easily add different machine types in the future. Conveyor feed systems are easy to modify, reconfigure and expand as your business grows.

Monk Conveyor systems use our standard Optical Devices to create a bespoke feed system. This will be cost effective, reliable and tailored to your lab. Our standard Optical Devices includes Stop gates, Tray Pushers & Turners, Machine Link Conveyors, Tray Sensors, Auto Stacking Machines and Sorting machines. Our Servo Drive Tray Lifts take trays above walkways, over machines or up onto mezzanine floors.

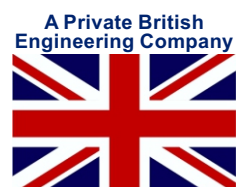
Our software and touch screens make systems easy for operators to use and configure. Our barcode and RFID readers mean we can identify job trays and use job specific VCA details to route work around your lab. Our reporting system can provide useful data to measure the performance of your optical lens conveyor. We have a good understanding of the automated optical lab process.

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Optical Lens Conveyor Systems

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Optical Lens Conveyor Systems

Optical Lab Conveyor System Stores

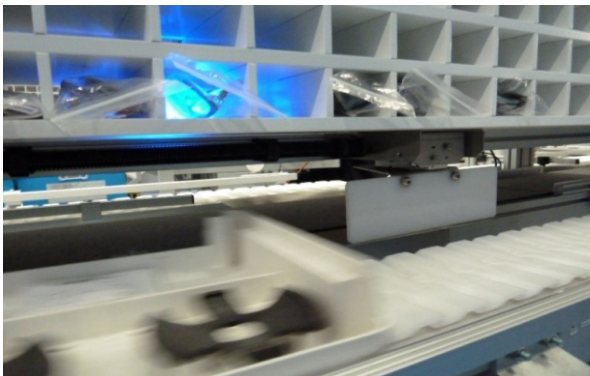


Our optical conveyor systems can help improve efficiency in a stores area, by moving job trays to the pick area and then feeding them onto the next part of the process in the lab.

Manual Picking Options

If racking and manual picking is used, then trays on the optical lab conveyor often need to be stacked. Our conveyors can feed job trays into our automatic Lens Tray Stacking and Tray De-Stacking machines. Trays can be automatically stacked or de-stacked and our optional bar code distribution system can be used to route individual jobs to specific areas of the lab.

- Stacking Machine automatically takes in individual trays and stacks them up in stacks of ten.
- De-Stacking Machine automatically takes in stacks of trays and feeds out individual trays.
- Sensors and software control automatically manages the optical lab conveyor system.
- Automatic conveyor feed to work stations can be provided to fit with the available space.
- A continual flow of work can be maintained to the production area.



Optical Lab Pick to Light System

A Pick to Light System shows staff quickly and efficiently where they should pick from. The system lights up a shelf location or pocket within a stores area. Staff see the light and know instantly this is the location of the optical job they need to pick. Boxed lenses, frames, or cases can be stored in the system. When they are required the system will then light up the pocket and they can be picked. Conveyors will then feed the job tray to the next part of the process. Visit our Pick to Light page for more information and videos on our systems.

Robotic Picking Options



If an Automated Robotic Picking System (supplied by RAX) is used then we offer both an infeed and an outfeed conveyor system. Infeed System is for Boxed Lenses and uses a small compact conveyor to feed individually boxed lenses to the loading area of the store. Our system copes with the large variety of box sizes on the market. We can feed to a number of machines at the same time. The store then holds a large quantity of lenses in a very compact space using its robotic picking arm. Around 600 boxed lenses per hour can be automatically fed to the machines. This figure is based on 4 machines and speeds will depend on the size of each machine. Outfeed System is for Job Trays to be loaded with boxed lenses ready to be processed by the lab. Our optical lab conveyor system feeds trays up to the machine so boxes can be automatically picked and placed in the tray. A number of loading points can be operated at the same time. The tray is then moved away from the machine ready for the next operation. Around 300 trays per hour can be automatically fed to the machines. This figure is based on 4 machines and speeds will depend on the size of each machine.



Optical Lens Conveyor Systems

Optical lens Taping



Our optical lens taping machine feed system continually feeds job trays to automatic taping machines. The system will make sure each machine is constantly fed with work for maximum machine use. If one machine is not operating, work will automatically be directed to other machines.

Software handles un-taped and taped jobs on a single conveyor saving valuable floor space.



- Single main feed conveyor minimises floor space
- Maintains good access to machines
- Operators can manage a line of 2 to 4 machines
- Trays queue into machines
- Sensors make sure the optical lens machines stay full
- Independent control and software system
- Quiet and smooth operation
- HMI touch screen for easy operation
- Pneumatic low pressure pushers for safe operator use
- Emergency stop safety circuit
- Optional line mimic with fault flags
- Speeds of 425 trays per hour* based on 4 Blockers

***Feed rates vary depending on the size and speed of the machines.**





Optical Lens Conveyor Systems

Lens Blocking Machine

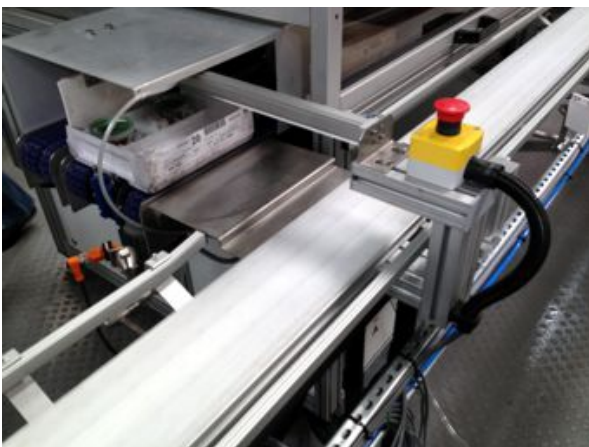


Our lens blocking machine feed system continually feeds job trays to automatic blocking machines. The system will make sure each machine is constantly fed with work for maximum machine use. If one machine is not operating, work will automatically be directed to other machines.

Software handles unblocked and blocked jobs on a single conveyor saving valuable floor space.



- Single main feed conveyor minimises floor space
- Maintains good access to machines
- Operators can manage a line of 2 to 4 machines
- Trays queue into machines
- Sensors make sure the optical lens machines stay full
- Independent control and software system
- Quiet and smooth operation
- HMI touch screen for easy operation
- Pneumatic low pressure pushers for safe operator use
- Emergency stop safety circuit
- Optional line mimic with fault flags
- Optional bar code system to route trays to machines
- Optional ring size routing to specific machines
- Speeds of 375 trays per hour* based on 5 Blockers



***Feed rates vary depending on the size and speed of the machines.**

Optical Lens Conveyor Systems

Alloy Cooling Conveyor



An alloy cooling conveyor is utilised to create the cooling time required. We offer a number of options for alloy cooling. The design can fit around existing machines and layouts. Conveyor speed and length will be calculated to give the right cooling time and production throughput.

- High level track to save floor space
- Cooling conveyor track can pass over machines and walkways
- Ceiling or floor supports
- Lifters or incline conveyors used to take the trays to high level and bring them down to floor level again
- Sensors and control manages the system
- Emergency stop safety circuit
- Optional HMI touch screen for easy operation
- Optional line mimic with fault flags
- Typical capacity between 200 to 800 trays per hour depending on the factory output

An alternative option can use our standard Lens Tray Stacker and De-Stacking machines to create tray cooling and buffer storage.





Optical Lens Conveyor Systems

Optical Lens Surfacing



Our lens surfacing feed system continually feeds to generator and polisher machines. An operator can manage a line of one type of machine only, therefore reducing the need for training on many different machine types.

The lens surfacing conveyor will make sure each machine is constantly fed with work for maximum machine use. If one machine is not operating, work will automatically be directed to other machines.

Software handles processed and unprocessed jobs on a single conveyor saving valuable floor space.



- Single main feed conveyor minimises floor space
- Maintains good access to machines
- Operators can manage a line of 4 to 6 machines.
- Trays queue into machines
- Sensors make sure the machines stay full
- Independent control and software system
- Quiet and smooth operation
- HMI touch screen for easy operation
- Pneumatic low pressure pushers for safe operator use
- Emergency stop safety circuit
- Optional line mimic with fault flags
- Optional bar code system to route trays to specific machines
- Typical speeds of around 150 trays per hour per Cell*.
- A number of Cells can be laid out for an efficient flow of work

*Feed rates vary depending on the size and speed of the machines.





Optical Lens Conveyor Systems

Ophthalmic Laser Marking



Our Monk laser feed system continually feeds to ophthalmic laser marking machines. Our optional barcode system can be added to identify jobs which need to be lasered.

The system will make sure each machine is constantly fed with work for maximum machine use. If one ophthalmic laser marking machine is not operating, work will automatically be directed to other machines.

Software handles processed and unprocessed jobs on a single conveyor saving valuable floor space.



- Single main feed conveyor minimises floor space
- Maintains good access to machines
- Trays queue into machines
- Sensors make sure the machines stay full
- Independent control and software system
- Quiet and smooth operation
- HMI touch screen for easy operation
- Pneumatic low-pressure pushers for safe operator use
- Emergency stop safety circuit
- Optional line mimic with fault flags
- Optional bar code system to route trays to a laser cell
- Typical speeds of around 150 trays per hour per Cell*.
- A number of out for an efficient flow of work Cells can be laid



*Feed rates vary depending on the size and speed of the machines.



Optical Lens Conveyor Systems

Lens De-Blocking & Lens De-Taping

Our Monk lens de-blocking feed system continually feeds to de-blocking and lens de-taping machines. The system will make sure each machine is constantly fed with work for maximum machine use. If one machine is not operating, work will automatically be directed to other machines.

Software handles blocked and unblocked jobs on a single conveyor saving valuable floor



- Single main feed conveyor minimises floor space
- Maintains good access to machines
- Trays queue into machines and sensors make sure the machines stay full
- Lens de-blocking and de-taping machines can be switched off for maintenance and the line will keep operating
- Independent control and software system
- Quiet and smooth operation
- HMI touch screen for easy operation
- Pneumatic low-pressure pushers for safe operator use
- Emergency stop safety circuit
- Optional line mimic with fault flags
- Optional bar code system to route trays to specific machines
- Typical speeds of 350 trays per hour* on 3 sets of machines

*Feed rates vary depending on the size and speed of the machines.

Optical Lens Conveyor Systems

Lens Tracing

Our Monk lens tracing work bench system allows trays to be continually fed to a line of tracing operators. The operators can sit at their bench and simply remove a tray from the feed conveyor, then place the completed job on the outfeed conveyor.

The lens tracing workbench is ergonomically designed and has an optional cut out in the centre to take a tracing



- Single main feed conveyor minimises floor space
- Sensors and control make sure operators are continually fed work
- Control and software system
- Quiet and smooth operation
- Design can be tailored to suit your preferences
- HMI touch screen for easy operation
- Emergency stop safety circuit
- Optional pneumatic low pressure pushers for safe operator use
- Optional line mimic with fault flags
- Optional bar code system to route trays to specific machines
- Typical speeds of around 600 trays per hour* based on 10 sets of operator benches

*Feed rates vary depending on the size and speed of the machines.

Optical Lens Conveyor Systems

Lens Glazing Conveyors

Our Monk lens glazing feed system continually feeds to optical glazing machines. The system will make sure each machine is constantly fed with work for maximum machine use. If one machine is not operating, work will automatically be directed to other machines.

Software handles processed and unprocessed jobs on a single lens glazing conveyor saving valuable floor space.



- Single main feed conveyor minimises floor space
- Maintains good access to optical lens glazing machines
- Operators can manage a line of 2 to 5 of the same type of machine
- No need for lifters or high level track
- Trays queue into machines and sensors make sure the machines stay full
- Machines can be switched off for maintenance and the line will keep operating
- Independent control and software system
- Quiet and smooth operation
- HMI touch screen for easy operation
- Pneumatic low pressure pushers for safe operator use
- Emergency stop safety circuit
- Optional line mimic with fault flags
- Optional bar code system to route trays to specific machines
- Typical speeds of around 250 trays per hour per production Cell*. A number of Cells can be laid out for an efficient flow of work

*Feed rates vary depending on the size and speed of the machines.

Optical Lens Conveyor Systems

Lens Coating & Tinting Conveyors

Lens coating conveyors are suitable for the clean environment required for lens Tinting and Coating. Job Trays can be diverted and fed from the main line to this area of production. Operators within this area will receive a continual flow of work.



- High level track can be used to save floor space
- Track can pass over machines and walkways
- Ceiling or floor supports
- Lifters or incline conveyors used to take the trays to high level and bring them down to floor level again
- Sensors and control manages the system
- Emergency stop safety circuit
- Optional HMI touch screen for easy operation
- Optional line mimic with fault flags
- A continual flow of work can be maintained

Optical Lens Conveyor Systems

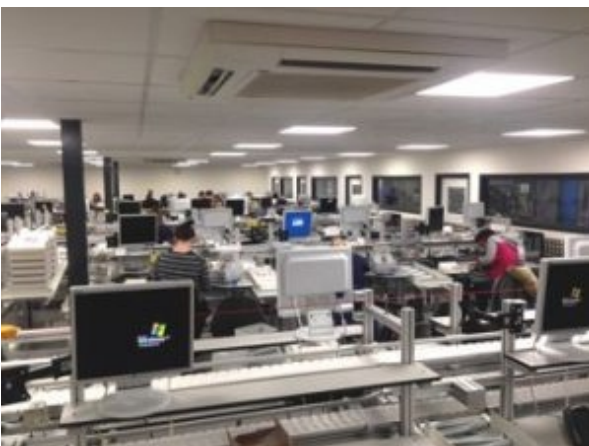
Frame Assembly & Ophthalmic Quality Control Conveyor

Our Assembly and Ophthalmic Quality Control Conveyor system allows trays to be continually fed to a line of operators. The operators can sit at their bench and simply remove a job tray from the gravity feed conveyor next to them.

A cell can be made up of a number of assembly benches. The number would be dependent on the production rate required from the line. When assembly have completed their work, they place the job tray on the outfeed conveyor which will feed the tray to the ophthalmic quality control conveyor. Then after QC have carried out the inspection, it is taken away on an outfeed conveyor and can be sent to packing and dispatch.

Colour sensors can be used to identify Rework for assembly and Rejects for QC.

The ophthalmic quality control workbench is ergonomically designed.



- Single main feed conveyor minimises floor space
- Sensors and control make sure operators are continually fed work
- Control and software system
- Quiet and smooth operation
- Design can be tailored to suit your preferences
- HMI touch screen for easy operation
- Emergency stop safety circuit
- Pneumatic low pressure pushers for safe operator use
- Optional line mimic with fault flags
- Optional colour sensors for routing work to rework and reject stations
- Typical speeds of up to around 250 trays per hour* based on 10 assembly benches

*Feed rates vary depending on the size and speed of the machines.

Optical Lens Conveyor Systems

Optical Lab Packing Conveyor

Optical lab packing conveyors are suitable for feeding from the end of a number of production lines and cells. Work is merged together to feed to the dispatch area. Lifters or incline conveyors can be used to feed over walkways. Empty job trays can then be feed back to the start of the system.

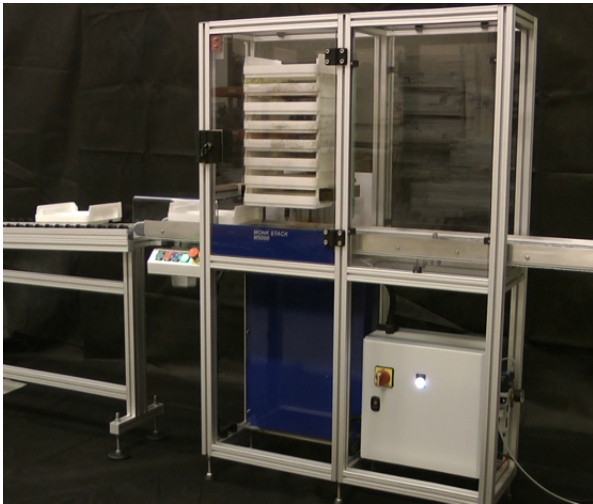


- Sensors, bar-code readers and control a control system manage the flow of trays
- HMI touch screen is used for easy operation
- Line mimic with fault flags for rapid fault finding
- High level track can be used to save floor space
- Track can pass over machines and walkways
- Ceiling or floor supports
- Lifters are used to take the trays to high level and bring them down to floor level again
- Emergency stop safety circuit
- A continual flow of work can be maintained



Optical Lens Conveyor Systems

Lens Tray Stacker & Lens Destacker



M5100 Lens Tray Stacker

Fully Automatic Lens Tray Stacking Machine. Download PDF Brochure or watch video.

Stacking Machine Input

Trays enter the lens tray stacker machine on a conveyor, stopped, lifted to the next level and held while the next tray enters underneath. This sequence is repeated until the desired stack height is reached.

Easy to Unload

Stacks of trays are stopped at the machine output, making it a simple matter for an operative to unload stacks as required.

Stacks can also be conveyed on to the next process or to storage.



Easy Access for Maintenance

The open design of our lens tray stacker machine offers clear access for maintenance and cleaning therefore reducing maintenance costs.

Lens De-Stacker in Operation

A line of stacks of component trays being conveyed to our de-stacking machine. Single trays exit at the far end on a conveyor on their way to the production line.



Optical Lens Conveyor Systems

Pneumatic Lift

Vertical optical manufacturing pneumatic lifts are used for automatically transferring items between floors or to overhead conveyors. Their narrow cross section allows them to be situated in the most restricted spaces. Two types of standard lift conveyors are available. The single lift type which can cycle on demand for individual items and the continuous lift type which is most suitable for higher transfer rates. We can also supply optical manufacturing pneumatic lift conveyors to suit a specific requirement. Please consult our sales department for details of the many options available.



Lifts are used for automatically transferring items to overhead conveyors or between floors. Normally in a large installation or production line products are conveyed between machines on overhead conveyors. This allows personnel good access to machines and equipment situated on the factory floor. Our lifts solve the problem of moving products between the two levels, they also have a narrow cross section which allows them to be situated in the most restricted spaces. Two types of lift are available. The single lift (shown above) which can cycle on demand for individual items and the continuous lift which is suitable for higher transfer rates.

The following pages show only a small selection of the large range of systems available. For more information please contact our sales department on 01252 369800.

Optical Lens Conveyor Systems

Optical Manufacturing Pneumatic Lift

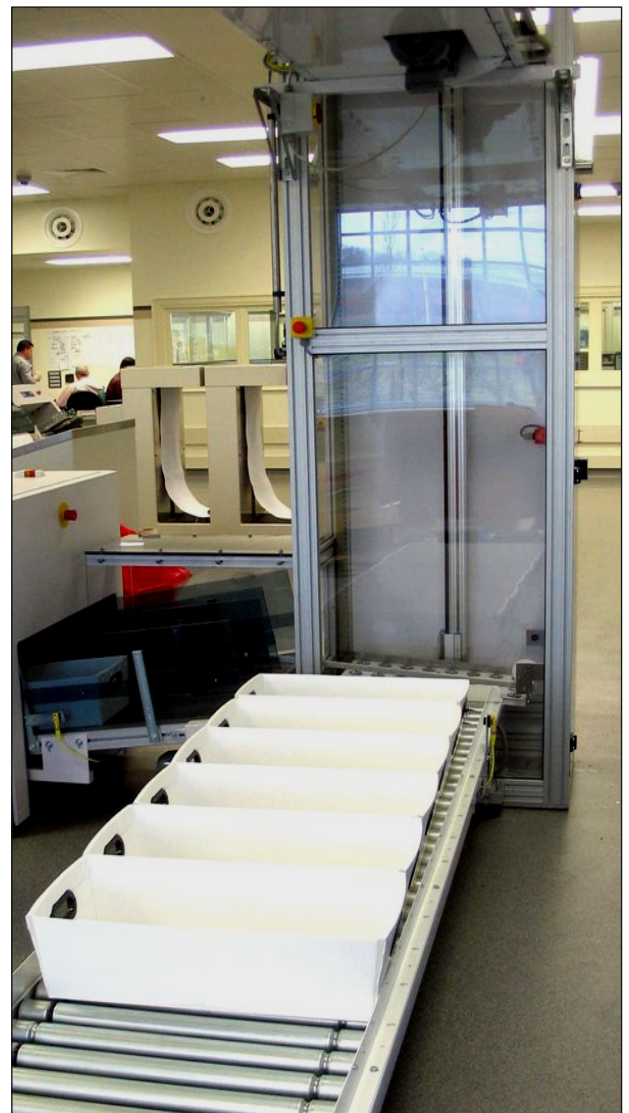


Row of automatic lifts used for transferring trays containing lenses from the lens producing machines up to the overhead conveyor system.

Automatic lift used for transferring tote bins 300mm x 400mm from float level to overhead roller conveyors.



Closeup of lift platform and lower transfer.



Optical Lens Conveyor Systems

Mechanical Lifts

A continuous lift in a stores area. Items are placed on a conveyor at the upper level where they form a queue, they are then automatically transferred onto the lift one at a time and descend to the conveyor on the floor below. They are then automatically transferred one at a time onto the conveyor.



- Fully automatic load and unload
- Up to 10m lift
- Widths 150mm to 600mm
- Loads up to 10kg
- Vertical speeds up to 20m/min
- Continuous indexing lift option
- Variable speed option
- Supply 415v/3ph/50hz or 240v3ph/50hz
- Protection IP65, continuous rating
- Frame with 'tee' slots with 8mm fixings
- Fully enclosed with polycarbonate
- Interlocked access doors





Conveyors & Automated Handling Solutions

Optical Lens Conveyor Systems

Mechanical Lifts Qimarox®

For medium to heavy product Monk Conveyors uses Qimarox material handling machinery as part of our mechanical lift systems. Their equipment includes palletisers, product lifts, pallet lifts, packaging machines and guarding systems. Integrating these standard units into our systems helps us achieve cost effective solutions and utilises tried and tested standard equipment. Monk Conveyors will design and build the necessary conveyors to feed to and from the units. We will also add guarding and a control system.

Qimarox equipment combines high performance with low costs and has advantages of: Modular design, for quick and easy installation and modification. Multifunctional and versatile so machinery can combine different tasks. Durable requiring low levels of maintenance.



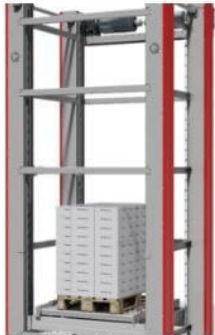
PRORUNNER MK1



PRORUNNER MK5



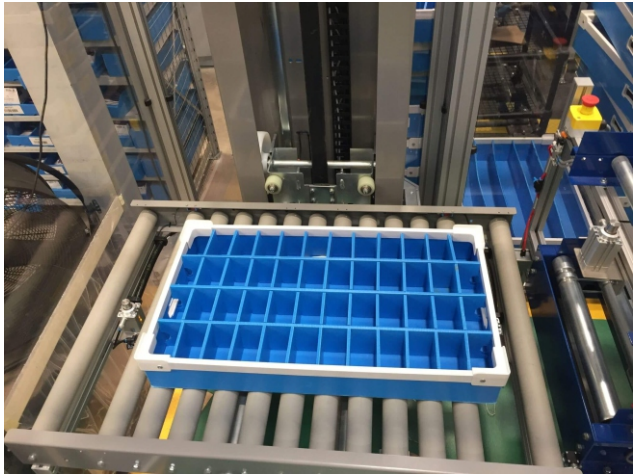
PRORUNNER MK9



PRORUNNER MK10



Mezzanine floor Product transfer



Powered roller lift platform

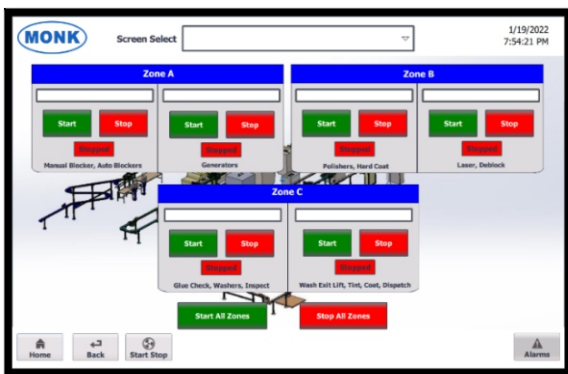


Optical Lens Conveyor Systems

Control Systems



A key part of any automation machinery or system is the electrical conveyor control system and software. This controls how the system operates and provides control and information to staff and maintenance. We design and build automation and conveyor control systems and carry out full mechanical, electrical, pneumatic and software installation and setup. Conveyor controls range from a single motor, up to a full control system with a HMI touch screen, line mimic and bar code system. Our electrical control panels are designed and built in house. We also have our own software engineering team for both PLC and PC based software. This helps us provide a high level of flexibility and maximum support to our customer. The conveyor control system will utilise an industrial Siemens or Allen Bradley PLC. This will operate all conveyor motors, sensor and pneumatics. It will also control the operator interface HMI touch screens. Our PC based systems use an industrial server or panel mounted PC.



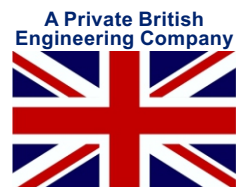
Operator Conveyor Control Touch Screens
HMI Touch screens are designed to be intuitive and easy for operators to use as a conveyor control. Screens make it easier for operators to run a conveyor system. Clear information is displayed and operator help screens are included. Fault finding messages can make it easier to find problems quickly. Mimic screens show a graphical representation of the production line. They can display the status of each part of the line, by changing colour to indicate if there is a problem or showing which status the line is in. If there was a blockage, a section of the line may show in red so an operator can go straight to the problem area. Screens can also allow operators to adjust the line settings and these can be password protected to ensure only trained people have access. Production performance can be displayed. Information on how many jobs are in the system, or a count of how many jobs have been sent to certain machines can be recorded. See more information in the KPI and Screen Reporting section.

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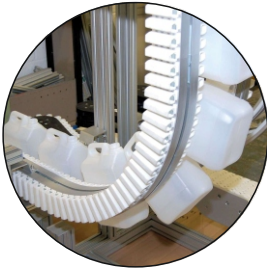
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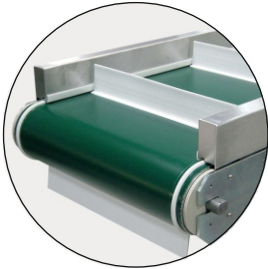




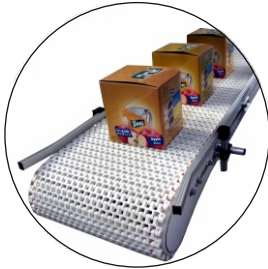
Conveyors & Automated Handling Solutions



Grip Conveyors



Special Flat Belts



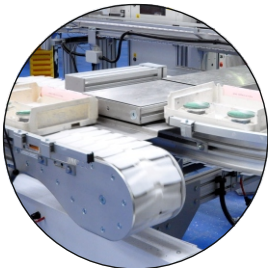
Mat Top Conveyors



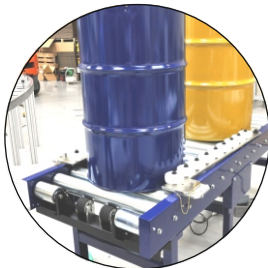
Hand Assembly Stations with Rotating Storage Tables



Carton Handling Conveyors



Escapements



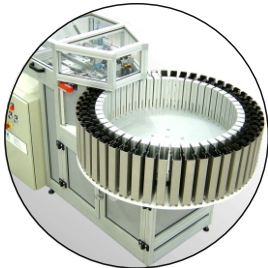
Special Roller Conveyors



Rotating Storage Tables



Roller Conveyor Diverter Units



Indexing Buffer Stores



Elevators - Plastic or Stainless Steel



Lifts to Overhead Conveyors



Multi-Lane Flat Belt Conveyors



Ready Made Meal Conveyors



Conveyors With Liquid Return Troughs



Fruit Packing Lines

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