

## Technology

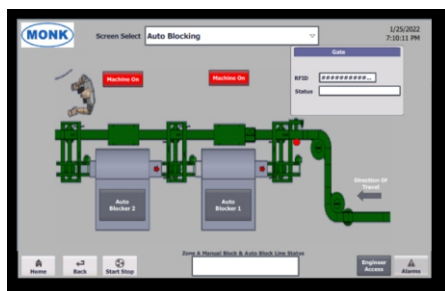
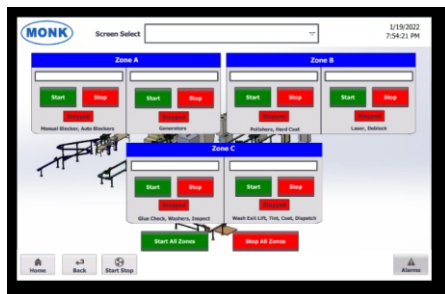


### Conveyor Control Systems

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.



### **MONK Conveyors Limited**

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A Private British  
Engineering Company





### Operator Interface Screens with Video

The screens allow the use of complex animations, video display, and a versatile user interface, which allows the POS-HMI display to show operators instructions, animations and videos. This is especially important for companies that manufacture many different products on the same production line, and the instructions on the display ensure the operator is able to keep track of what operation to apply to each product type. Monk use a custom HMI solution, due to the complex graphical, processing and interfacing requirements. This would not have been possible to implement to the same level of quality using off-the-shelf HMIs. The built-in magstripe card reader on the display is used by Monk's software for user authentication and to identify the user. Cutting edge conveyor control touchscreen for operator interface: Ultra-flat touchscreen Pole mountable Energy efficient Windows operating system Solid state hard drives Contemporary looking Media screen



### Remote Access

Our Remote Access System to the PLC/PC and also the Barcode/RFID system means that we can "dial-in" to make minor software changes and assist site with problem solving. This allows for improvements or changes to be made quickly and without a software engineer visiting site.



### PLC Control Software (Programmable Logic Controller)

Programmable Logic Controller software will control the sequencing of the system. It will be designed to operate in a logical and easy to use method. Motors will be shut down when they are not required to be operated which will save energy and reduce wear. The PLC software will be designed to self-recover where possible and reduce the amount of product which needs to be manually moved after an interruption to the running (i.e. power loss, emergency stop). Our product distribution software can manage the conveying of products along predefined routes to selected machinery. This enables products to be fed accurately and cost effectively through your factory. Machines or operators will be kept fed with work without the need to manually move goods around. This reduces idle times and production costs. Conveyors can stop and start automatically; and queues of products can be controlled. If a machine is out of action for maintenance, there can be options to route product to other areas. Our programmable logic controller system can communicate with barcode readers/RFID scanners and other machine control systems.



### **Warehouse Management PC Software & WMS Comms**

Our PC software uses standard modules along with our capability to write bespoke warehouse management software. This makes use of OPC-UA an industrial communication standard to communicate with the PLC and the other machinery on site. Data from the site Manufacturing Software/Warehouse Management System (WMS) can be retrieved. This can then be used to populate a Monk database used for job tracking and routing. As jobs travel through each part of the production process, the job status can be updated. Updated data can then be sent back to the customer site software system. This can then be used for business analytics, quality assurance and job tracking. The customer can also use this data to track fulfilment of work orders, and to know when more production of different part numbers is required. Data updates can be put into our warehouse management software using an Excel file in a standard template, which can then overwrite the relevant database fields. This software allows the customer to quickly make changes to data relating to production on-the-fly. Our ability to connect the warehouse management software with machines, presses, baggers, labeller and printers enables us to provide a complete controlled and connected operating system.



### **IO Link and Profinet**

What is IO-Link?

IO-Link is a short distance, bi-directional, digital, point-to-point, wired (or wireless), industrial communications networking used for connecting digital sensors and actuators to either a type of industrial fieldbus or a type of industrial Ethernet.

IFM and Siemens offers the widest product portfolio of IO-Link sensors, masters and software.

What are the advantages of using IO-Link within a conveyor system?

The IO-Link system offers decisive advantages as a digital interface for connecting sensors and pneumatic actuators.

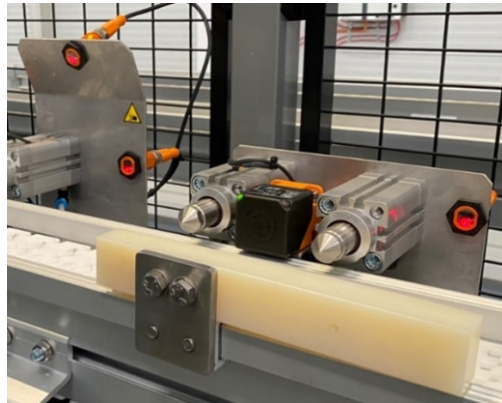
What is Profinet?

Profinet is an industry technical standard for data communication over Industrial Ethernet, designed for collecting data from, and controlling equipment in industrial systems.





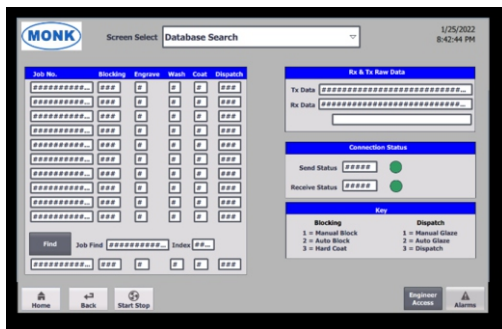
# Conveyors & Automated Handling Solutions



## Barcode Scanners & RFID Readers

We set up and install Barcode Scanners and RFID Readers as part of our conveyor systems. We can then use this technology to request job data from the site production/warehouse management system and use the information to route an individual product to a specific location, machine, operator or packing station.

- Intelligent Bar Code Readers
- RFID Programming (from Bar Code Job Numbers)
- Integration of BCR and RFID into the conveyor control system allows HMI display of current job number, relevant job details and job destination



	Last	PCS	AVG CT
L2	60 min	1.376	2.6
L1	4 hrs	5.600	2.6
	8 hrs	10.400	2.8

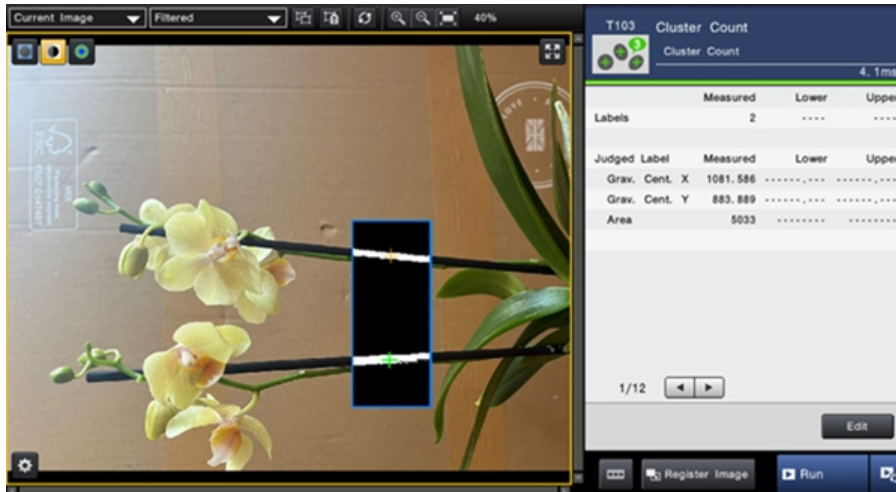
## KPI and Conveyor Screen Reporting

Our conveyor reporting system can provide information which is used to measure performance and improve efficiency of operators, machines, presses, and processes within a conveyor system. Machine performance can help determine which part of the process does not work efficiently. Work in and work out volumes, cycle time, and stoppages can be recorded by a conveyor reporting system. Job and product locations can also be tracked within a system and a location search function can be used to find work. Jobs can be given a status and this can be reported to the factory production software. Data can be presented on a live screen using a traffic light system to give an instant visual display of areas which are not meeting daily targets. This can be viewed on a local PC screen or displayed on a large screen to include operators and teams. Data can also be exported for processing.



# Conveyors & Automated Handling Solutions

## Vision Systems



We set up and develop medium and high-end camera vision systems. This powerful technology can be used for identification of products, up to advanced product quality inspection.

Vision cameras are set up and connected using Profinet to our Programmable Logic Controller (PLC) or PC based systems.

Have a question?

Get in touch today.



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