

## Independent Cart Technology

Increase machine flexibility and throughput  
to enhance overall productivity



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**Rockwell**  
**Automation**



Allen-Bradley • Rockwell Software



# **MagneMotion**

Independent Cart Technology

A breakthrough in **fast, flexible motion control**

**FASTER PRODUCTION CHANGEOVER**

**INCREASED MACHINE FLEXIBILITY**

Changing customer requirements may be driving you to deliver smaller production runs that require faster production changeover and increased machine flexibility. At the same time, you may need to optimise output and increase profitability while reducing costs.

At the core of MagneMotion Independent Cart Technology is a new generation of linear motors that provide significantly higher performance than conventional conveyors.

## **Increased throughput and flexibility**

Precision control and intelligent motion optimize vehicle efficiency and speed, eliminating disruption and hold-ups.

## **Improved Reliability**

Fewer moving parts than conventional systems, meaning less maintenance and downtime, and 10 times as fast.

## **Modular & Scalable**

Unmatched flexibility accommodates 1000s of independently controlled vehicles and multiple product variations.

## **Simple Integration**

Standard industrial communication protocols and software-configured move profiles for fast and easy changeovers.



## The Independent Cart Technology

### The **next generation** of motion control

Historically, motion control has incorporated chains, belts, gears and walking-beam mechanics. These mechanical solutions had limited flexibility, wasted energy and led to excessive maintenance costs.

iTRAK and MagneMotion solutions are the next step in motion control, eliminating the rotary driven chains, belts and gears of the past. It replaces mechanics with simple, effective software profiles redefining speed and flexibility in automation.

#### Traditional motor solutions

##### Mechanical line shaft

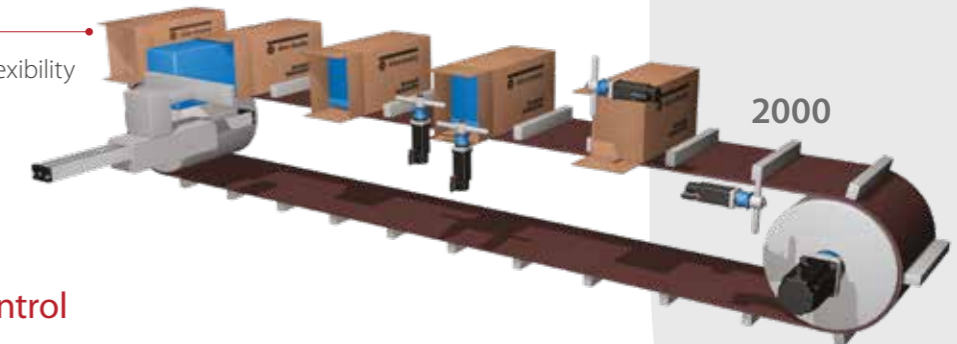
- Complex mechanical designs and constant maintenance
- Little flexibility or scope for upgrades
- Limited in speed by the wider system
- Energy wasted through friction



1985

##### Electronic line shaft

- Reduced maintenance and a degree of flexibility
- Upgrade templates along with new mechanical challenges
- Improved line speed
- Improved energy consumption



2000

#### A new approach to motion control

##### iTRAK and MagneMotion solutions pitchless technology

Designed without mechanical constraints to:

- Minimise maintenance
- Change between products at the push of a button
- Simplify mechanical designs
- Upgrade easily by reducing complex tooling
- Operate faster with less downtime
- Reduce energy consumption through direct drive



2015

#### Independent Cart Technology is the solution you're looking for if:

- Your current application uses chains, belts or gears
- Your existing designs are reaching limits of operational speed
- You are unable to combine continuous and intermittent motion
- Changeovers are frequently required
- Removing fixed spacing could improve overall performance
- You have excessive maintenance costs

Watch Now 

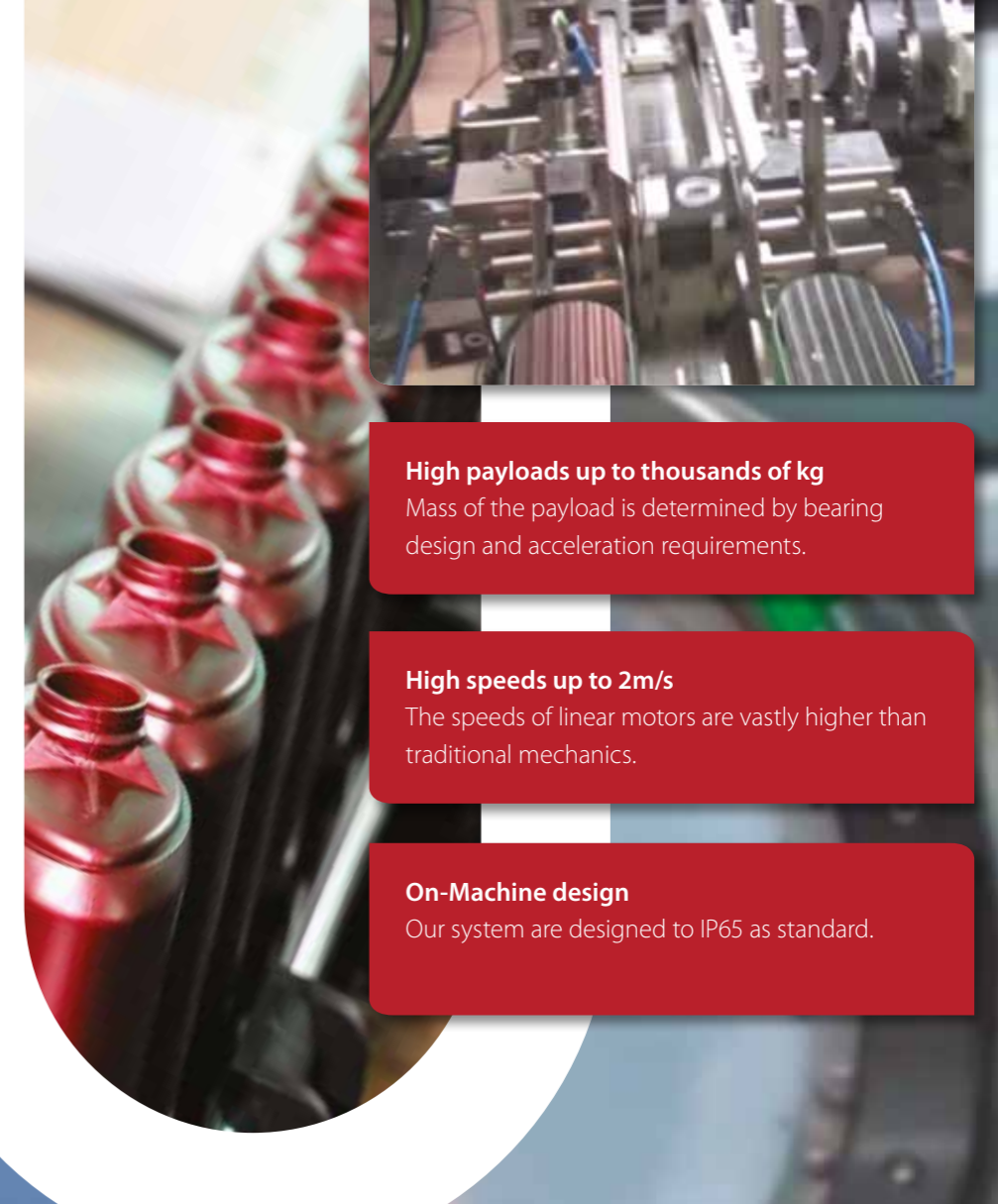






## Why Independent Cart Technology is a breakthrough in motion control

Independent Cart Technology and MagneMotion are today's solution for motion control challenges, providing flexibility while enhancing performance significantly. Intelligent Conveyor Technology gives machine designers the opportunity to design a 'pitchless' machine that can be easily adjusted to your specific application.



**High payloads up to thousands of kg**  
Mass of the payload is determined by bearing design and acceleration requirements.

**High speeds up to 2m/s**  
The speeds of linear motors are vastly higher than traditional mechanics.

**On-Machine design**  
Our system are designed to IP65 as standard.

iTRAK making a difference



### CAMA Packaging

[Watch Now](#)



"The iTRAK provides the latest and greatest technology that can provide greater efficiency, speed and flexibility."

**Billy Goodman, Managing Director, CAMA North America**



### ARUP Clinical Laboratory

[Watch Now](#)



The versatility of the track's technology has allowed us to stay within the same footprint but significantly increase our capacity for the future.

**Heidi Kildezt, Project Manager, ARUP**

## Unprecedented flexibility



programmed with Studio 5000 Logix Designer®.

With Independent cart technology, switching package size or collation settings can occur at the push of a button, and all

## Integrated Architecture solution

iTRAK and MagneMotion is part of the Integrated Architecture® system from Rockwell Automation which helps deliver machines that are flexible for Just-In-Time manufacturing with performance levels beyond those achievable with conventional mechanical systems.

## Fundamental servo control at the core

Until now, servo motors have been either rotary or linear. iTRAK combines these two concepts into a powerful motion solution which offers linear or rotary motion in one package, resulting in a whole new approach to motion control.

## Faster line speeds

Our Independent cart technology's speed and acceleration is significantly higher than the traditional mechanical solutions such as chains and belts, with its programmable independent movers improving line speed further.

## Reduced maintenance

iTRAK and MagneMotion has been designed to use very few moving parts. The movers are rigidly connected to the structure and durable bearings and guide rails can significantly reduce maintenance downtime.



## Increased line **speed** and **flexibility** – **better value** all round

The best value a machine builder can provide is to improve the process that their machine executes. iTRAK and MagneMotion free the machine designer from the constraints of mechanical cam design so that they can focus on the process, the programming, and game-changing innovation.

## *Faster line speed + Faster changeover = DIFFERENTIATION*

Leading machine builders worldwide are designing their next generation products around iTRAK and MagneMotion. These new machines for case packing, pouching, carton filling, collating, device assembly and life science applications are best-in-class for throughput and reduced downtime. In the same way, end users who have implemented these machines report investment returns far exceeding expectations.

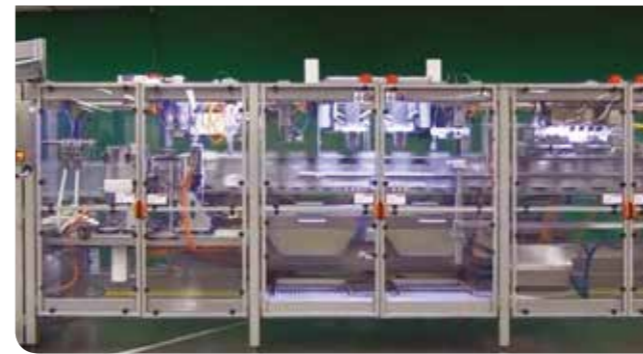
### The benefits to manufacturers:

- Increased production rates of 50% or more
- Reduced downtime for changeovers
- Smaller machine size saves floor space
- Shorter runs can still be profitable
- Lowered periodic maintenance

### The benefits to machinery suppliers:

- Market leading machine output of 50% or more
- Increased flexibility with a single design
- Added value to your customers
- Differentiated machine design
- Smaller machine and simpler mechanics

iTRAK making a difference



### **KHS** Pouch filling and sealing

**Watch Now** 



"iTRAK is revolutionary. Instead of using mechanical elements to move product through the machine, we're now using a magnetically-driven device that can adjust its geometry through software. It will forever change the way pouching is done."

**Roger Calabrese, Competence Centre Manager, KHS**

## How Independent Carts work

When designing machines, the iTRAK and MagneMotion systems can be purchased as a fully customised and assembled unit, as individual components, or as a mix of customised and standard parts.

### **Modular, adaptable and scalable for any application**

The layouts of the iTRAK and MagneMotion systems are flexible and adjustable to help achieve an optimum size machine for production requirements. The system is built of IP65-rated sections, which each contain a multi-phase motor and drive. Curved and straight sections can be combined in different combinations to create ovals, rectangles, and squares. With iTRAK the shape can also be rotated into horizontal or vertical orientations along any axis.





## QuickStick

Faster, cleaner, and more efficient than conventional systems

QuickStick is the Intelligent Conveyor System that offers increased throughput and a lower cost of ownership, providing a faster, cleaner, and more efficient alternative to pallet conveyor systems. Linear motor technology enables modules to be configured end-to-end, creating an electro-magnetic force to propel carriers up to 10 times faster than traditional systems.

### Intelligent motion

- Ideal for industrial, clean, harsh and other unique environments
- Closed-loop positioning and identification (ID) tracking

### Flexible

- Transports and positions a wide range of loads
- Handles and tracks different payload weights simultaneously
- Modules can be added or removed providing diverse production line options

### Easy to use

- Modular design integrates easily with existing systems
- Passive payload-bearing vehicles travel with no power/communication cables

### Reduced cost of ownership

- Fewer moving parts require less maintenance
- Increases productivity by decreasing carrier move time to process station

### Suitable applications

- Ideal for a wide range of assembly and process automation applications



## MagneMover LITE

Fast, controlled, flexible motion

MagneMover LITE is an intelligent and highly cost-effective conveyor system specifically designed to move light loads quickly and efficiently. MM LITE outperforms conventional belt and chain conveyors for OEM/in-machine applications and for demanding motion requirements, delivering new levels of process optimization and throughput.

### Intelligent motion

- Accurate positioning (no hard stops required), bi-directional travel, smooth motion and continuous carrier tracking and reporting

### Process optimization

- Simulation and configuration tools simplify system design and optimization

### Complete traceability

- Know the unique ID of each carrier and where it is at all times, with complete reporting for audit trail, and with the ability to prioritize the routing of individual carriers

### Flexible layouts

- System layouts can be oriented in a number of different ways

### Suitable applications

- Pharmaceutical manufacturing, sterile and aseptic filling, food and beverage packaging, laboratory automation, medical device and consumer products manufacturing

### Easy to clean and maintain

- IP65 wash-down capable. Few moving parts means less maintenance





## QuickStick HT

### Intelligent automation for heavy loads

QuickStick HT is designed to provide fast, precise transport for heavy loads up to 1000's of kilograms. It is the ideal solution for automotive assembly or other industrial applications as well as clean room, glove box or submerged applications, and can be easily integrated into existing manufacturing lines or serve as a platform for next generation applications.

#### Functional

- Ideal for industrial, clean, harsh, underwater and other unique environments
- Closed-loop positioning and identification (ID) tracking
- Innovative design options allow for new layouts, differing guideway solutions, cornering, switching and fewer required robot axes

#### Easy to use

- Modular design easily integrates with existing systems
- Easy to use control system for rapid implementation
- Easily change stop location with a simple software command

#### Reduced cost of ownership

- Fewer moving parts require less maintenance
- Increases productivity by decreasing carrier move time to process station
- Fewer sensors, stops, cables, connectors, and plumbing means less downtime

#### Flexible

- Transports and positions a wide range of loads
- Handles different payload weights simultaneously

#### Suitable applications

- Ideal for industrial, clean, harsh, underwater and other unique environments



## iTRAK

### A breakthrough in fast, flexible motion control

iTRAK is a revolutionary new approach to motion control that dispenses with mechanical or servo motion technology, enabling the independent control of multiple, magnetically-propelled movers on straight and curved paths. Using iTRAK, machine and equipment builders can customize machines more easily, reduce mechanical complexity, and deliver higher performance.

#### Increase throughput and flexibility

- Precision control and intelligent motion optimize vehicle efficiency and speed, eliminating disruption and hold-ups

#### Improve reliability

- Fewer moving parts than conventional systems, meaning less maintenance and downtime, and 10 times as fast

#### Modular and Scalable

- Unmatched flexibility accommodates 1000s of independently controlled vehicles and multiple product variations

#### Simple integration

- Standard industrial communication protocols and software-configured move profiles for fast and easy changeovers

#### Suitable applications

- Case packing, pouching, carton filling, collating, device assembly and life science applications



# Technical specifications



Product	Motor Size	Max Speed	Max Force
MagneMover LITE	1M	2m/s	10N
	.5M	2m/s	10N
	Curve	2m/s	6N
QuickStick	Switch	2m/s	6N
	1M	2.5m/s	Dependent on Magnet configuration
	.5M	2.5m/s	Dependent on Magnet configuration
QuickStick HT	1M	3m/s	2500N
	.5M	3m/s	2500N
	.5M Double Wide	3m/s	5000N

Product	Acceleration	Repeatability	Payload
MagneMover LITE	up to 0.2G	±0.5mm	up to 2kg
QuickStick	Up to 1G	±0.5mm*	2-100kg
QuickStick HT	up to 6G	±1mm	100-4500kg

\*±0.1mm attainable with calibration

Product	Certifications	Ingress Protection	Feedback Type
MagneMover LITE	UL, CE	IP 65	Absolute
QuickStick	UL, CE	IP 65	Absolute
QuickStick HT	UL, CE	IP 65	Absolute

Product	Feedback Resolution	Sections Length
MagneMover LITE	<10 um	N/A
QuickStick	<10 um	N/A
QuickStick HT	<10 um	N/A

## iTRAK operating configurations



Vertical



Horizontal



Stand up 90°

## iTRAK Specifications Table

Motor Size	Maximum Speed	Maximum Force
50 mm	> 5 m/s	264 N
100 mm	4 m/s	529 N
150 mm	2.75 m/s	793 N

Minimum Mover Pitch	65 mm
Acceleration	> 10g
Repeatability	< 100 um
System Length	12m per Gateway
Payload	Only limited by bearings and F=ma
Certifications	UL, CE
Ingress Protection	IP65
Feedback Type	Absolute
Feedback Resolution	< 10 um
Section Length	400 mm



2 M Precision Rail Loop



QuickStick motor



MagneMover LITE System Track Pucks





[www.magnemotion.com](http://www.magnemotion.com)

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