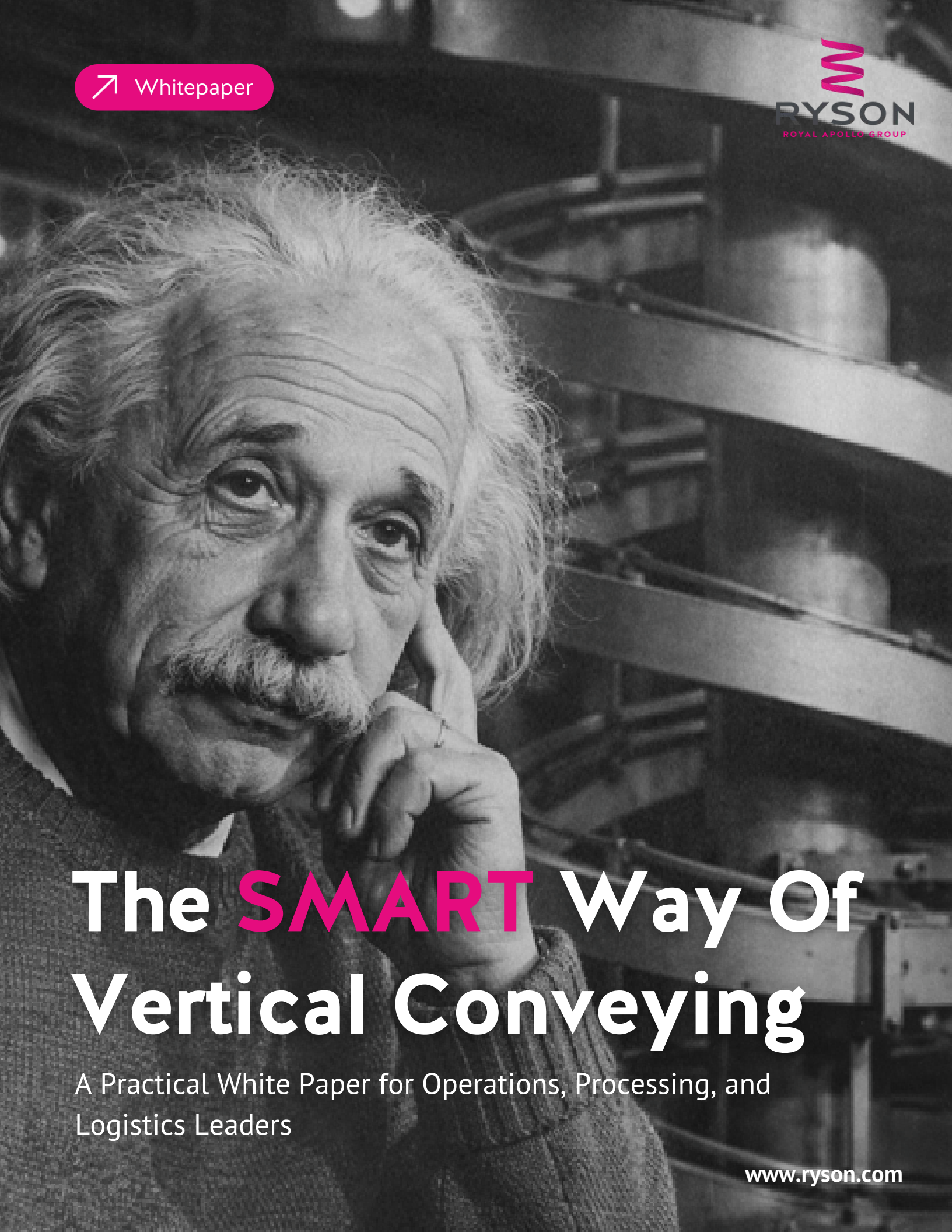


Whitepaper

RYSON
ROYAL APOLLO GROUP

The SMART Way Of Vertical Conveying

A Practical White Paper for Operations, Processing, and Logistics Leaders

www.ryson.com

Executive Summary

Processing plants, warehouses, and distribution centers are under constant pressure to do more with less space, less energy, and less downtime.

At the same time, many facilities still rely on outdated conveyor systems that limit flexibility and complicate expansion.

When asked about top challenges in 2024's Warehouse Operations & Trends Survey 45% cited "outdated storage, picking, or material handling equipment" as a major issue, a 10% increase versus last year's survey[1].

*A solution for these challenges can be found in Ryson's **SMART Spiral Conveyors**.*

They provide a vertical conveying solution that helps operations teams optimize and modernize existing lines, replace outdated conveyors, and prepare facilities for future growth.

This white paper explains what makes Ryson Spirals SMART and why they stand apart from traditional, welded, non-modular spiral conveyors.

This is particularly interesting for decision makers in Retail and e-com, food, beverage, personal care operations looking to modernize and optimize their process.

Downtime costs per year

$1.2 - $4.8 Million*

On a national industry scale, unplanned downtime costs for manufacturers and large distribution centers in the United States are estimated to be around **$50 billion** per year.

45% of warehouses struggle with outdated equipment

In a 2024 warehouse/DC operations survey, 35% of respondents cited insufficient space or storage modifications as a major issue, and 45% pointed to outdated storage or material handling equipment as a top challenge.

+80%

Space Savings with a Ryson Spiral Conveyor

Ryson Spiral Conveyors can increase space savings by up to 80-90% compared to traditional incline conveyors because they use a very compact vertical footprint, freeing up valuable floor space for other operations or expansions within existing facilities.

*) Downtime in facilities and warehouses due to conveyor and related material handling equipment typically costs from $5,000 to $50,000 per hour depending on the size and type of operation. For a medium to large warehouse, annual downtime losses can easily reach several million dollars—case studies show annual downtime costs of $1.2 million to $4.8 million or more for complex systems such as overhead or mining conveyors.

[1]) Logistics Management, 2024 Warehouse/DC Operations Survey
www.logisticsmgmt.com

The Challenge: Modernizing Operations

Executives and operations leaders face a common set of constraints:

→ **Limited floor space and rising real estate costs**
Average peak warehouse space utilization is over 73%, and more than one-fifth of operations report being 85–94% full at peak, leaving little room for layout changes or growth[1].

→ **Pressure to increase throughput without expanding facilities**

→ **Aging conveyor infrastructure that is difficult to modify**
Industry analyses show many facilities are expanding SKUs and buildings rather than headcount, increasing pressure on existing automation and making flexible, reconfigurable systems more valuable.

→ **Downtime caused by maintenance-heavy equipment**
Across industrial operations, unplanned downtime commonly costs from $10,000 up to $500,000 per hour, with many organizations estimating an average around $25,000 per hour in recent maintenance surveys[2].

→ **Growing expectations around energy efficiency and sustainability**

Vertical conveying is often the bottleneck in these environments. Traditional spiral conveyors may move product up or down, but many lack the flexibility, efficiency, and serviceability required in modern operations.

Ryson's SMART Spirals are designed to solve these problems at the system level.

What Makes a Spiral Conveyor "SMART"?

Ryson Spiral Conveyors are built around five core principles:
Sustainability, **M**odularity, **A**daptability, **R**eliability, and **T**echnology.

Each principle directly supports the goals of operations leaders, who are responsible for performance, uptime, and long-term cost control. With downtime costs often in the tens of thousands per hour and outdated material handling equipment identified as a leading pain point, there is a strong case for replacing old conveyors with more reliable, future-ready systems.

1) Logistics Management, 2024 Warehouse/DC Operations Survey 2) www.facilitiesdive.com

S Sustainability

M Modularity

A Adaptability

R Reliability

T Technology

S - Sustainability

Energy efficiency and long service life are no longer a nice-to-have. They are core operational requirements.

Ryson Spirals are engineered with a low-friction design that reduces power consumption. Each spiral operates with a single drive motor, which simplifies control, lowers energy demand, and reduces mechanical complexity.

Material selection also plays a key role. Ryson builds Spirals using aluminum and steel, materials known for durability, recyclability, and long-term availability. Fewer moving parts lead to less wear, fewer replacement components, and reduced maintenance frequency.

For operations teams, this translates into:

- Lower energy costs
- Reduced maintenance labor
- Longer equipment lifespan
- Lower total cost of ownership

M – Modularity

Most conveyor systems fail when operations change. Ryson Spirals are modular by design. This allows facilities to adapt conveyor layouts as production volumes, product types, or process flows evolve. Instead of removing and replacing welded equipment, teams can reconfigure or expand existing spiral systems. Modules can be reused, repositioned, or integrated into new layouts.

For decision makers, modularity means:

- Faster layout changes
- Reduced capital expenditure over time
- Less scrap and waste during upgrades
- Greater return on initial investment

A modular spiral supports long-term planning rather than locking operations into a fixed configuration.

A – Adaptability

Ryson Spirals support a wide range of applications across:

- Food and beverage processing
- Personal care and consumer packaged goods
- Warehouses and distribution centers in Retail and E-Commerce

Products move smoothly and continuously, minimizing product stress and improving flow consistency. The compact vertical footprint makes Ryson Spirals especially effective for retrofit projects. Facilities can replace inclined conveyors or outdated vertical lifts while freeing up valuable floor space.

Many customers achieve:

- Higher throughput
- Cleaner layouts
- Improved traffic flow on the production floor

Adaptability allows operations to improve performance without expanding the building envelope.

R – Reliability

Downtime directly impacts revenue, service levels, and labor efficiency.

Ryson Spirals are engineered for continuous operation in demanding environments. Precision manufacturing, proven components, and decades of application experience contribute to dependable performance across thousands of global installations.

When service is required, Ryson provides responsive support and readily available spare parts. This long-term service commitment extends well beyond installation.

For executives and plant leaders, reliability delivers:

- Predictable uptime
- Fewer unplanned stoppages
- Stable production schedules
- Confidence in long-term operation

T – Technology

Modern operations require equipment that can integrate into evolving control and automation strategies.

Ryson Spirals are designed with digital-ready configurations and integrated controls. This supports alignment with modern production systems and prepares facilities for future automation upgrades.

Technology in a Ryson Spiral is not about complexity. It is about readiness. The system is built to remain relevant as operational requirements change.

How Ryson Spirals Stand Out

Many spiral conveyors on the market rely on welded, fixed designs. While functional, these systems often limit future layout changes and require full replacement during expansions. This of course also increases downtime and creates higher long-term costs, even if the initial investment might be slightly lower.

Ryson's modular, high-quality design approach offers a clear alternative.
Instead of treating a spiral as a static structure, Ryson treats it as a flexible system that supports operational change.

This difference becomes especially important for facilities planning:

- Line updates or retrofits
- Capacity increases
- New product introductions
- Long-term facility optimization

A Smarter & Modern Approach to Vertical Conveying

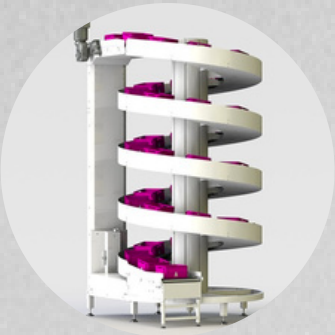
Ryson SMART Spirals help operations leaders:

- Optimize and modernize existing conveyor lines
- Replace outdated vertical conveying equipment that slows the process down
- Improve space utilization
- Reduce energy and maintenance costs
- Plan for future growth with confidence

Choosing a Ryson Spiral is a strategic decision that supports performance today and adaptability tomorrow.

If you are evaluating options to update conveyors, optimize vertical flow, or improve overall line efficiency, Ryson Spiral Conveyors offer a proven, future-ready solution.
Connect with our team to discuss how a SMART Spiral can support your operation.

Ryson Portfolio



Unit Load Spiral Conveyor

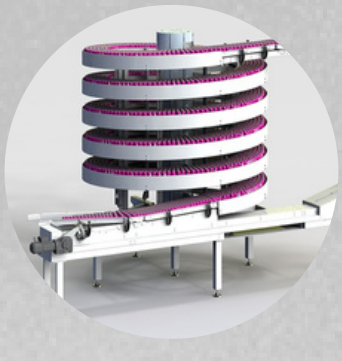
Our standard model for cases, boxes, totes, etc.

Efficiently transports cartons, cases, trays, or totes vertically in a continuous flow, featuring a compact footprint. This machine has low maintenance needs, and offers high reliability for packaged goods handling.

Multi Level Spiral Conveyor

The space-saving solution, that moves product between different levels

Allows loads to enter or exit at several different elevations, making it ideal for multi-tiered warehousing, E-Com and order picking systems while saving floor space and streamlining product flow.



Mass Flow Spiral

For products in mass like cans, bottles or pouches

These Spirals are designed to vertically convey full or empty bottles, cans, jars and similar containers. They are ideal for canning and bottling operations where units need to be conveyed vertically in mass. Products are conveyed up or down in a continuous single file or mass flow at a rate of 2000 units per minute.

Bucket Elevator

For bulk materials like grains, powders, screws, etc.

A versatile bulk material conveyor, combining vertical and horizontal movement in a fully enclosed system with overlapping pivoting buckets to prevent spillage. It's suitable for gentle handling in industries like food, pharmaceuticals, and chemicals.

Find more information on **www.ryson.com**

About Us

Ryson International, Inc. designs and manufactures Vertical Conveyors like Spirals and Bucket Elevators in Yorktown, Virginia. Our focus on modular construction, robust components, and responsive service helps facilities modernize with minimal risk.

Ryson is a member of the **Royal Apollo Group**, established in 1847 and headquartered in the Netherlands. Royal Apollo manufactures in the Netherlands, USA, and Thailand with service operations in Netherlands, USA, Thailand, China, India, and Mexico. As one global company, we are the world's leader in Vertical Conveying!

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