RS INDUSTRIA

Keep it moving.

USE CASE

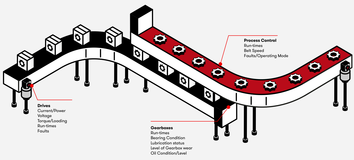
How RS Industria could help to make significant savings for industries utilising Pack Conveyers.

Introduction.

Pack Conveyors offer full automation options for moving products through each stage of the production process.

The products can be packaged in either their primary container or their secondary distribution packaging and automation minimises product handling, limiting the risk of damage and handling errors. Pack Conveyors are extensively used in consumer product manufacturing, from bottling plants to frozen food.

What we monitor.



The Challenges.

Energy

Depending on their application, conveyor systems can form a significant portion of the energy consumption of any given line.

Where the health of the asset is not optimal, wasted energy usage can go unnoticed. Potential efficiency savings of the line are missed where the energy data has insufficient granularity to highlight potential problems with sub-components, such as drives or gearboxes.

Conveyors can run continuously even when empty, if there is no product detection system in place, thus wasting energy.

Inability to quantify the energy consumption changes when accumulation conveyors fill to capacity.

Operations

Packing conveyors are at the heart of a process line, moving component parts or finished products along the line, and when faulty they impact the entire manufacturing line. Most conveyors are single line without bypass lanes.

Repairs can be complex resulting in additional delays.

Conveyor assets often need to be optimized in terms of speed and acceleration to maximise productivity.

Maintenance

Bearing failure can result from mechanical issues such as looseness, misalignment and imbalance, negatively impacting asset life.

Conveyor belts can be over-tensioned or fitted with the wrong specification belt, resulting in excessive loading on the motors and gearboxes.

The drive for ever-improved throughput of the conveyor system can result in programmed speeds and acceleration rates exceeding design specifications, which can cause damage to the line and result in early component failure.

Our Solutions.

Energy

Energy data can often be collected direct from the variable speed drive, when used. If no electrical consumption data is available, then energy meters or current transformers can be easily installed which can pass data directly to RS Industria.

Operations

Process data such as line speeds, acceleration & deceleration rates can often be captured directly from the PLC or control system. This will enable accurate operational recording as well as aid problem solving.

Maintenance

Monitoring current & torque can detect changes in the loading of the pack conveyor. Vibration and temperature sensors on the motors, gearboxes and bearings can be used to monitor specific leading indicators of failure.

Capturing process control system data, such as running speed, stops, faults and operating modes, provides accurate operational recording and improves problem solving.

Oil condition sampling, either online or periodic, can give a very early indication of potential failures and highlight operations that may cause excessive degradation of the mechanical components.

Your Benefits.

Energy

The energy cost for a given conveyor can be quantified. The ability to also highlight wasted energy from over-operation (running at higher speeds & accelerations than might be necessary, or running empty).

Operations

Maximise line speed and acceleration rates for most efficient operation of the whole line.

Minimise the losses as a result of conveyor system failure.

Prolong the lifespan of component parts, by ensuring they are operating within their correct system parameters, such as loads, speeds, belt tensions etc.

Maintenance

Much of the energy data collected can also be used as leading indicators of failure. Through tracking current and torque, changes in the electrical load can be used to indicate changes in the system being driven. This can yield early detection of belt quality or over-tensioning issues with the conveyor. Using the additional process parameters, we can build a picture of how the asset performs from a reliability standpoint.

Additional protection of the motor, gearbox and bearings offered by vibration sensors allows monitoring of mechanical stresses such as looseness, misalignment, bearing failure & gearbox degradation.

Payback & ROI

These indicative calculations show that the system could potentially pay for itself within just 3 months.

300% ROI

Payback within 3 months.

Year 1 Cost – £3,300

Annual Monitoring Cost - £1,200*

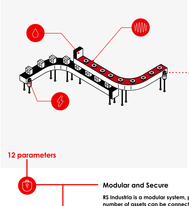
Set Up Cost:
- Hardware - £1,100
- Commissioning - £1,000

* This represents the pack conveyor's share of the annual monitoring fee. This assumes the conveyor assembly has 10 motors and a single gearbox.

Savings – £13,500

- **Electricity – £5,500**
- **Operational – £2,000**
- **Maintenance – £6,000**

Modular Framework.



Start Simple, Grow Smart.

Modular and Secure

RS Industria is a modular system, providing an advanced, robust and cyber-secure framework into which any number of assets can be connected. This cloud-based system provides the following:

- **Asset Dashboards** – Designed for the specific asset type being monitored
- **Functional Dashboards** – Displaying Energy, Utilities, Compliance or Uptime for multiple assets, individual production lines or site-wide – all in one place.
- **Mobile App** – Real-time data display and alerts - Putting the data in the hands of those who need it, where they need it, when they need it.
- **Rules & Alerts** – Notifications and Warnings sent by SMS or email – or to the mobile app

Multi-Purpose Data.

Data Integration

As RS Industria integrates data from multiple sources, the system can re-purpose and combine data to extend the scope for asset insight.

	Data Options		
	Energy	Operations	Maintenance
Voltage	✓	✓	✓
Current	✓	✓	✓
Torque	✓	✓	✓
Start/Stop		✓	✓
Fault/Operating Mode		✓	✓
Runtime		✓	✓
Speed/Acceleration		✓	✓
Temperature (Drive/Gearbox)		✓	✓
Oil Condition - sensor based			✓
Vibration-based			
Bearing Damage Indicator[1]			✓
Lubrication Warning Indicator[2]			✓
Ultra-sound based			
Slow speed Bearings			✓
Primary Parameters	**3**	**5**	**4**
Re-purposed Parameters	**0**	**3**	**8**

Data Integration

As RS Industria integrates data from multiple sources, the system can re-purpose and combine data to extend the scope for asset insight.

For example, monitoring electrical drive voltages and current enables the system to calculate torque.

All three of these variables can be used to not only better understand the energy usage of an electrical drive, but also its physical condition and whether it is operating outside its normal parameters.

High current and torque might indicate a bearing problem, a conveyor belt sticking or a batch of ingredients with the wrong viscosity.

1. **Bearing Damage Indicator** – Using frequencies from selected areas of the spectrum to rapidly identify when a bearing is being damaged, long before such damage is evident, or a failure occurs.
2. **Lubrication Failure Indicator** – this value uses specific frequencies to warn if a bearing is insufficiently lubricated, whether the lubricant is manually or automatically delivered.

These indicators can be further enhanced by using the operational data to provide context such as variable loading.

Multi-Purpose data offers significant benefits over the use of dedicated single-purpose monitoring systems:

- **Single point of integrated data** – enables comparison between different variables, potentially offering greater insight
- **Context-sensitive alerts** – take account of normal operational variances to avoid false alarms

Gain Asset Insight Now

Find out how we can help lower energy usage, enhance reliability and improve operational performance: in a way that is simple, fast and affordable.

1

Book Requirements Review

Review your requirements with one of our consultants. We'll help you prepare for the next step in the process, which is a detailed discussion with one of our solution design engineers. To book a Requirements Review, **click this link.**

2

Browse Our website

To find out more details including:
- Real-world case studies
- Use-cases like this one
- Product videos

...and more. Visit our website to see what is possible with RS Industria.

https://www.rs-industria.com

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Contact Us directly

+44 (0)333 2470235

rs.industriasupport@rs-components.com

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rs-industria.com