RS INDUSTRIA

Have your Fill

USE CASE

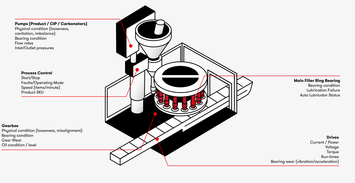
How RS Industria could help make significant savings for industries utilising High-speed beverage packing lines.

Introduction.

High-speed beverage packaging lines are highly complex and expensive, often costing tens of millions of pounds. The most expensive and critical asset on the line is normally the rotary filler.

The core of the filler is the main ring, which picks up the bottles, cans or containers and rotates them firstly into the filling station and then through the closure mechanism – crown capper, screw top or can lid seamer, depending on the container type

What we monitor.



The Challenges.

Energy

Sustainability is a key factor influencing the beverage industry, with sites wanting to know the consumption behaviours of their machines to implement energy optimisation strategies and reduce operational costs.

Operations

From an operations perspective, it is well known within the industry that filling machines play a very significant role in the food and beverage sector. The Overall Equipment Effectiveness (OEE) of the whole line is normally calculated from the filler, with breakdowns, changeovers, short stops and speed loss in the filler heavily impacting the performance and availability of the line, whilst short fills rejected after the filling stage will impact quality. The machine operator can control many aspects of the machine, which will affect the size and scope of production losses, as the filler moves away from its operational centreline

Maintenance

The challenge as a maintenance engineer on a high-speed filler is usually around limited machine access, as some of these machines run 24/7 only stopping for 6-8 hours per fortnight. Ensuring that engineering resource is used effectively during that period can be a big challenge. While inspections can find certain issues with the machine, underlying issues in hidden objects such as bearings and gearboxes cannot always be seen and can result in a failure during production

Our Solutions.

Energy

Our solution uses the data that is already typically available within the variable speed drives and panels to capture energy consumption at point of use. If this is not available, we have metering solutions which can capture this data and allow energy usage to be quantified.

Operations

By collecting data directly from the control system PLC, we can start to gather process and operational data such as machine speeds, product size, run times and process stage, to build a picture of how the asset is operated. This will enable accurate operational recording as well as aid problem solving. Where PLCs are not used or their data is inaccessible, a separate data collection unit can be fitted to mirror existing control signals.

Maintenance

Predictive maintenance requires the continuous monitoring of the relevant leading indicators of failure - over all the operating modes, both production and CIP (cleaning in place). By using continuous monitoring, rather than relying on intermittent monitoring or manual inspection, the risk of maintenance-induced failure is eliminated. Our solution uses a wired vibration system that collects data continuously, capturing operating data through all processes and speeds - along with any transient events which may occur. We couple this vibration data with machine data such as speed, product and container, to build a detailed operational profile of the filler.

Your Benefits.

Typical Cost Savings

Better operating insight means better management of processes and their assets, resulting in lower operating costs. Here are some examples, based on our real-world experience in production environments:

Energy

Using our data and the insight from the process, the site can start to quantify the energy cost on the asset and understand wastage. They can look at the energy consumption variations related to product type or speed changes. Using this data, we can also highlight wasted energy from over-operation of components such as pumps and drives.

Operations

Our solution will provide a better understanding of machine operation, creating insight into how the machine performs through different products and cycles. This insight can also highlight how the machine's operation influences its reliability.

Maintenance

Reducing the risk of unplanned failure is key in the industry where 24/7 availability is required. Not only can our system help detect that a change in condition has occurred, the early warnings that it produces can enable corrective action to take place and return the asset to a healthy state. If the asset cannot be returned to a healthy state, then the system can provide early warnings that account for the lead-times for replacement parts, reducing the MRO spend until needed. Using condition monitoring, and correcting at the earliest opportunity, reduces the risk of any secondary damage to the machine, allowing the site to move from reactive maintenance to planned.

Payback & ROI

These indicative calculations show that the system could potentially pay for itself, on electricity and operational savings alone, within 12 months.

95% ROI

Payback within 12 months.

Year 1 Cost – £6,300

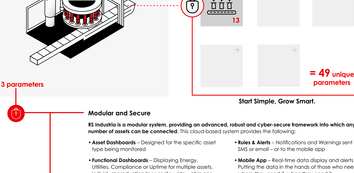
Annual Monitoring Cost - £1,800*	
Set Up Costs	Hardware - £2,500
	Commissioning - £2,500

* This represents the filler's share of the monthly ongoing service cost of EMS, which includes 100 parameters.

Savings – £66,000

Operational – £2,500
Energy – £3,500
Maintenance – £60,000

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.
- **Rules & Alerts** – Notifications and Warnings sent by SMS or email – or to the mobile app
- **Mobile App** – Real-time data display and alerts - Putting this data in the hands of those who need it, where they need it, when they need it.

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 /Power	✓	✓	✓
Torque	✓	✓	✓
Start/Stop		✓	✓
Fault/Operating Mode		✓	
Runtime		✓	
Product Count (BPH, CPH etc) Line Speed		✓	
Temperature (Drive/Gearbox)			✓
Vibration-based			
Physical Movement Indicator			✓
Bearing Damage Indicator[1]			✓
Lubrication Warning Indicator[2]			✓
Ultrasound-based			
Filler Ring Bearing Condition			✓
Oil-based			
Oil Condition Sensor			✓
Primary Parameters	**3**	**4**	**6**
Re-purposed Parameters	**0**	**3**	**4**

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 Warning 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 operating 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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