The Digital Transformation of Food Safety & Pest Management

How Next-Gen Connected Technologies
Drive Smarter, More Efficient Risk Mitigation

ECOLAB®

Contents

ECOLAB®

Introduction: Navigating the Never-Ending Food Safety Challenge

Ensuring food safety and quality is a complex challenge. Whether you're a foodservice business, a food retailer or a food & beverage production operation, you're juggling the variables of multiple inputs, human-factor challenges, and other food safety risks spread across your facility.

The most challenging reality of food safety is that there is no endpoint. An organisation cannot permanently "achieve" food safety; the risks are constantly evolving. Food safety is a 24/7/365 challenge – requiring constant monitoring and diligence. But every organisation has a finite limit on its resources. It is practically impossible to see everything, everywhere, all the time.

For most organisations, this leads to a tricky risk equation: How do you deploy your resources efficiently and effectively to reduce your food safety risks while optimising your business operations – both controlling your labour and operational costs, and supporting your revenue-generating performance (production, sales, etc.)?

Next-Gen Connected Technologies Power Smarter Food Safety Strategies

Today, more and more foodservice, food retail and food & beverage production businesses are solving the continuous-monitoring challenge by leveraging next-generation connected technologies. These connected technologies help enable constant monitoring – giving businesses eyes and ears in their facilities and on their operations, 24/7/365, in real time – and making smart, data-driven food safety monitoring more practical and achievable.
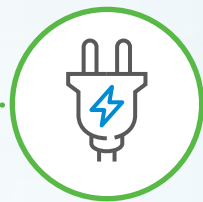
ECOLAB®

Industry 4.0: Connected Technologies Transforming Our World

While everyone learned about the original industrial revolution in primary school, the growing buzz around Industry 4.0 has many wondering, "What is Industry 4.0 – and how did we get to a fourth industrial revolution?" Here's the short history:

INDUSTRY 1.0
Steam and water-powered revolution

INDUSTRY 2.0
Electricity-powered revolution

INDUSTRY 3.0
Computer-powered revolution

INDUSTRY 4.0
Data-analytics powered revolution

This fourth industrial revolution is about integrating next-generation connected technologies that continuously collect data throughout our world – and using analytics to make sense of, and make use of, all that data. Today, nearly every aspect of our daily lives reflects this fourth industrial revolution. Our smartphones, our cars, our homes – they're all collecting real-time data and analysing it to add value to our lives.

Next-Gen Connected Technologies Are Already Transforming the Food Business

For food businesses across the supply chain, these same kinds of next-gen connected technologies are already powering Industry 4.0 strategies, from collecting data on customer behaviour to driving smarter marketing, to monitoring employee behaviours to better understand operational performance. These connected technologies give food businesses better visibility to some aspect of their business, enabling faster risk and trend identification, providing clearer risk prioritisation, and empowering businesses to take a data-driven approach to optimising resource allocation.

ECOLAB®

A Powerful Use Case:
Smarter Pest Management

One of the most promising use cases of the Industry 4.0 model for food safety is in integrated pest management. Food businesses are recognising the tremendous potential and business value of continuous remote pest monitoring, data-driven alerting and risk prioritisation, and advanced prescriptive analytics insights to power a smarter, more efficient and more effective approach to pest risk reduction. The rest of this ebook will give you a look at how these connected technologies are helping food businesses answer the critical questions in their integrated pest management strategies.

How do I **continuously** monitor food safety risks?

How do I **trace** the origins of a problem?

How do I **focus** my attention/resources where it matters most?

ECOLAB®

DATA-DRIVEN PEST MANAGEMENT IN PRACTICE

How Do I Continuously Monitor the Food Safety Risks in My Operations?

(24)

With so many variables that impact food safety in the average food business, manual monitoring can only go so far. This is particularly true for pest monitoring, where the limit is both logistical (humans can't access or detect everything) and financial (more frequent manual inspection costs more). Leading pest management providers are combining next-gen connected technologies with their on-site service expertise to address this challenge with proactive, data-driven service. Remote monitoring devices are placed both internally and externally to help monitor high-risk and hard-to-access areas. Service experts combine insights gleaned through frequent on-site inspections with insights from these remote devices to proactively reduce pest risks across the facility.

CASE STUDY:
Connected Rodent Traps
FOOD RETAIL

A food retailer has next-gen connected rodent traps spread across the facilities at all of its locations. These remote monitoring devices enable the food safety programme manager and the integrated pest management provider to monitor pest activity throughout the facility. When the pest management provider recognises rising rodent pressure in specific locations (and can even cross-reference risk factors to help determine root cause, whether structural, seasonal, etc.), they can immediately activate prespective service to mitigate pest risks – before the rodent issues create a food safety incident or violation that harms customers or damages the business' reputation. This connected trap strategy has been shown to improve pest findings by **300% and help drive an 80% reduction in overall pest activity.**[1]

1. Based on Ecolab Intelligent Rodent Monitoring case study, 2021

ECOLAB®

DATA-DRIVEN PEST MANAGEMENT IN PRACTICE

How Do I Trace the Origins of a Problem?

When a food safety incident does occur, it can be difficult to dig down, sift through the many variables and inputs, and determine the root cause. Next-gen connected technologies are enabling data-driven traceability and data-driven root-cause analysis for food businesses. Many food businesses are already using digital ledgers like blockchain technology to place irrevocable digital stamps on every input and component of their operations. Some are now using advanced AI to investigate food safety issues, using these smart technologies to connect the dots between seemingly isolated issues and larger systemic problems.

CASE STUDY:

Digital Reporting and Traceability

F&B PRODUCTION

An F&B production plant uses real-time quality-control monitoring to support food safety and product quality. When those quality-control monitors detect a pest issue with a particular product run, the quality control manager uses data-driven traceability to rapidly conduct a root-cause analysis investigation. That investigation connects the finished product quality issues with the high-trending stored product pest counts – at a specific receiving dock on specific dates. The organisation can then evaluate whether the pest issue stems from structural or sanitation issues at the receiving dock itself, or if the pests may instead be coming from a specific supplier of raw materials. This data-driven root-cause analysis not only enables rapid remediation of both the product quality issue and the underlying pest issue – before they become potential food safety or product loss incidents – but also provides the comprehensive documentation needed to comply with audit requirements.

ECOLAB®

DATA-DRIVEN PEST MANAGEMENT IN PRACTICE

How Do I Focus My Attention Where it Matters Most?

It is hard enough to continuously and rigorously monitor food safety in a single location. But that challenge grows exponentially for food businesses with multiple locations or facilities. No matter the size of the business, finite budgets and resources demand appropriate prioritisation of "fixes." Leading pest management providers now offer advanced, analytics-powered digital platforms that use data from connected devices to provide food businesses with intuitive visualisations of trending risks and a clear prioritisation of the most critical pest issues and food safety risks. This includes heatmapping and other highly visual insights that enable smart risk prioritisation. Best-in-class digital platforms go one step further, delivering prescriptive insights – indicating what steps the business and pest management provider should take to remediate the prioritised issues.

CASE STUDY:

Data-Driven Risk Prevention

FOOD SERVICE

A food service business uses a digital pest management platform to gain a single-pane view of pest activity and related food safety issues across its many locations. That digital dashboard automatically prioritises the highest-risk pest issues for the business. The pest management provider, along with the business' food safety manager, can see that upward-trending small-fly activity is currently a high-priority risk. But the platform also indicates frequent reports of staff non-compliance with daily drain and floor cleaning in the past months. This detailed data from different aspects of the business' operations enables the pest management provider to provide prescriptive, targeted service actions. In this case, prescribing drain clean-out and small-fly elimination protocols – as well as staff re-training on proper drain and floor-cleaning protocols to help mitigate small-fly risk.
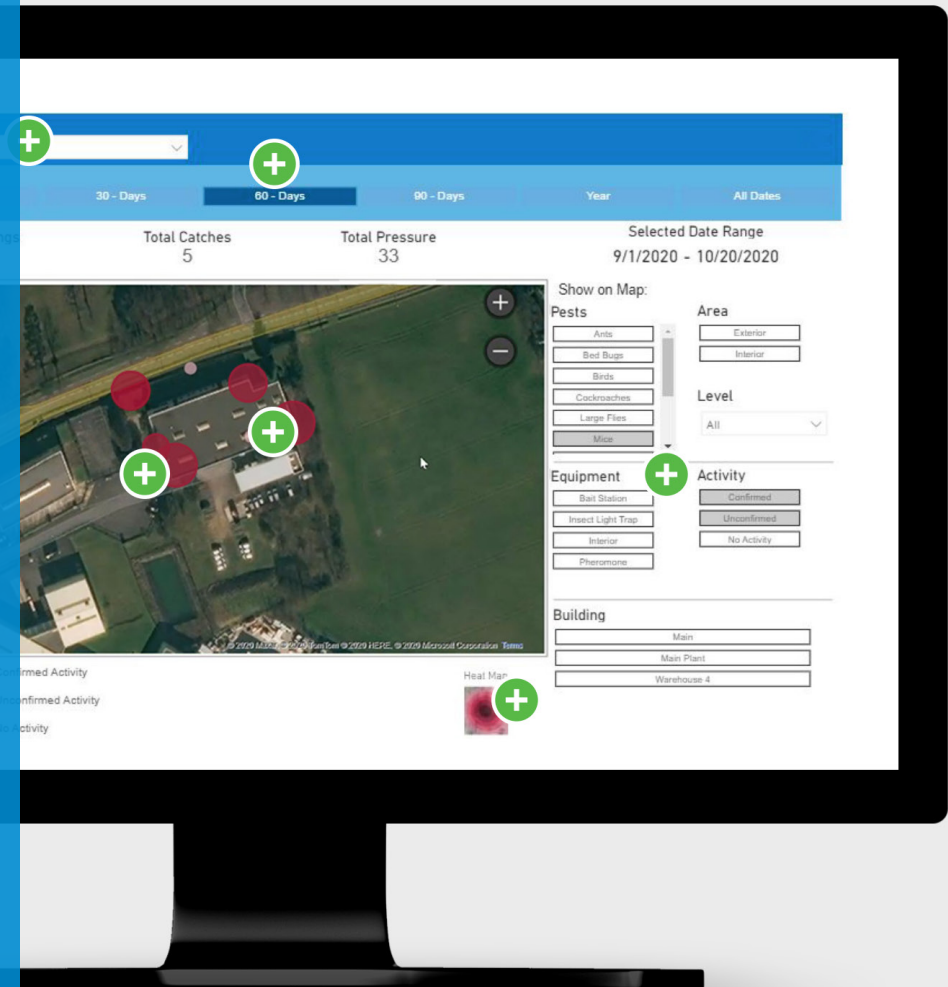
ECOLAB®

Leaning on Vendor Partners to Accelerate Your Digital Transformation

Food businesses are rapidly digitising their operations to enable smarter, more data-driven decision-making and strategy – from data-driven supply chain, to data-driven payroll, to data-driven marketing. Now, as digital transformation comes to food safety, next-gen connected technologies are redefining what's possible – enabling more comprehensive risk monitoring, faster and more reliable alerting, and more effective prioritisation and remediation of identified food safety risks. But the reality is that no business – not even the most tech-savvy – is driving this digital transformation entirely on its own. Instead, the most successful digital transformation initiatives are defined by partnerships with innovative vendors with deep expertise deploying next-gen connected technologies – and dedicated resources for IoT data processing, analytics and data-driven response.

To successfully position themselves food businesses need to actively seek out vendor partners who are already working to bring this new era to life.

They need vendor partners who offer – and are continually developing – innovative remote monitoring technologies that provide continuous, real-time risk visibility that is the foundation for data-driven food safety. But data alone isn't enough. Food businesses need to seek out vendor partners that provide analytics-powered digital platforms that make sense of all that data, focusing the business (and its partners) on the things that matter most to drive quick-win improvements in food safety and drive high-impact strategies to drive continuous improvement and operational excellence.

ECOLAB®

Start Building a Data-Driven Pest Management Programme

As part of our comprehensive Integrated Pest Management services, Ecolab leverages innovative technologies that apply the vast potential of remote connectivity and analytics to power a data-driven, risk-based approach to protecting your food safety and quality – and powering the success of your food business.

For more information about how Ecolab can help your food business, visit:

www.ecolab.com/insights-map

About Ecolab Pest Elimination

Ecolab is the global leader in water, hygiene and infection prevention solutions and services. Every day, we help make the world cleaner, safer and healthier – protecting people and vital resources.

ECOLAB®