Temperature Monitoring & Traceability in the Food Supply Chain

Ensuring Compliance, Accountability & Customer Satisfaction from Field to Fork

Tive | FOOD **DIVE**

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Most food professionals already have some understanding of the importance of temperature tracking and monitoring for food products throughout the entire supply chain. In addition, every company has its standard operating procedures for products handled within its facilities and at the end destination — but it's less clear what's happening while products are on a truck or in transit.

No matter how much control you have over the product — and its quality at the manufacturer or receiver levels — transit can be a blind spot in your product's journey. Is the truck stuck in traffic? Did its refrigerated system malfunction? Is the temperature holding steady? These questions often go unanswered until after the truck shows up at the dock doors with spoiled products. However, advances in technology are giving shippers and their partners more visibility into goods while they're on the move.

Temperature monitoring and tracking have the potential to give every party involved insight into what is happening with products — from the moment perishables are picked in the field until they are unloaded from the truck. That's why many food supply chains are already implementing the technology and seeing benefits.

One of the biggest differences they're experiencing with technology is transparency. Temperature loggers and real-time trackers make it so that everyone knows what's happening in the supply chain with regard to temperature — from the supplier to the transporter to the tracking solution company. If an issue occurs with a container or supplier, this transparency built into the system prevents the responsible party from denying culpability.

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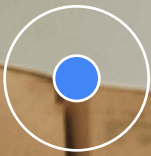
On top of that, customers today are also demanding visibility. Both retailers and restaurateurs want assurances their food shipments are traceable and have maximum shelf lives.

To meet this demand for greater supply chain traceability and visibility, the contract processing partner facility for OBE Organic — Australia's first and oldest organic beef exporter — switched to Tive's hyper-accurate Solo 5G trackers and cloud-based visibility platform. OBE Organic trusted its partner's decision, and the technology solution opened new doors to risk management that provided improved peace of mind.

> **We all have a role to play in optimizing sustainable supply chains around the world. Picking the right technology is critical.**

DALENE WRAY
Managing Director at OBE Organic

Besides contributing to a more transparent supply chain, temperature tracking can also reduce industry blind spots and create a safer, more reliable cold chain. This playbook looks at the best options for shippers and logistics providers to ensure quality and consistency. It will also examine technology's role in quality control when shipping perishable foods — and the best ways to implement it.

The Importance of In-transit Quality Control

Traceability plays an important role — at every stage — as perishable items move from field to fork. Poor quality control during transit is a potential problem for everyone involved in shipping a product, from the shipper to the carrier to the retailer. If a product is damaged during transit:

- Shippers risk customer dissatisfaction and poor brand image
- Carriers may be held accountable for product damage despite insufficient proof of what really happened
- Retailers need to determine whether they can put a product on shelves or detect whether a shipment has been compromised

Having transparency into the movement of goods helps solve each of these pain points. Let's look at five of the biggest drivers of better quality control in transit.
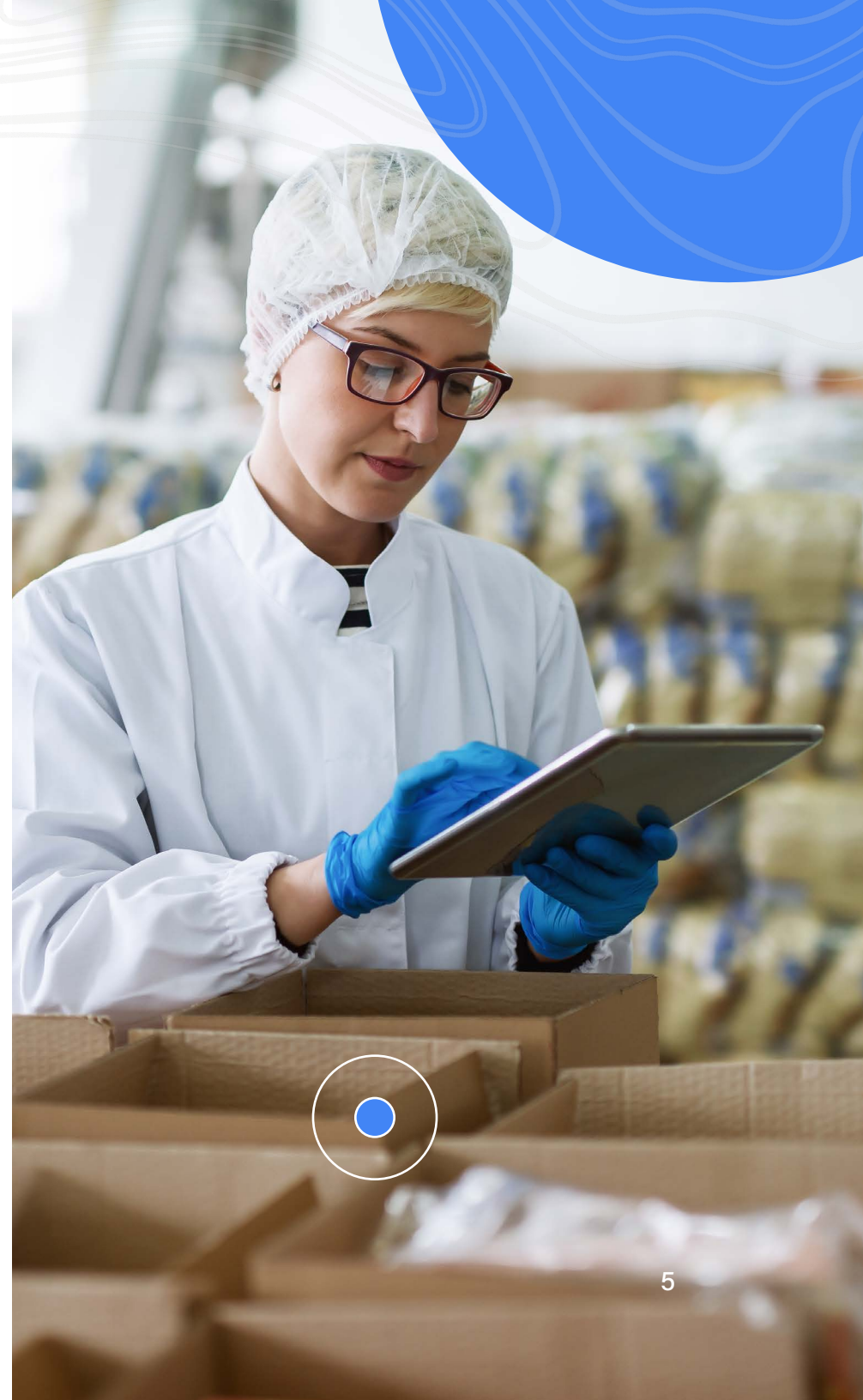
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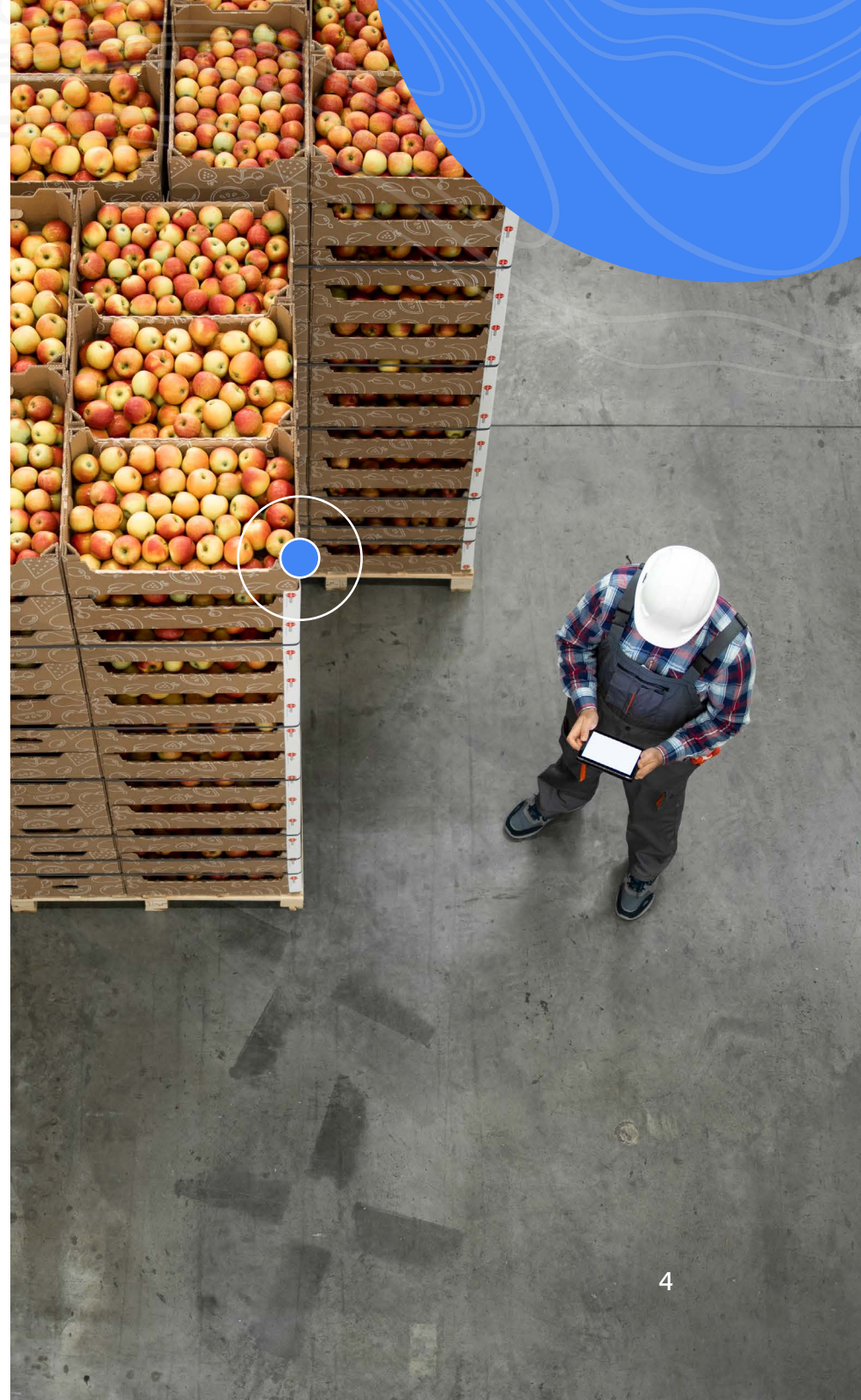
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Food Safety & Dollars Lost

Thanks to the Food Safety Modernization Act (FSMA), which was passed by Congress and signed into law by President Barack Obama in 2011, the U.S. has created guidelines that require shippers to keep records of temperature data while transporting perishable foods. This law was enacted to create a safer food supply chain and reduce the incidence and spread of foodborne illnesses.

Technologies such as temperature loggers can help producers comply with the law, and for many, compliance drives investment.

"The main focus of getting people on board is to avoid any issues as far as health and safety. That's No. 1," explains Michael Simons, account executive at Tive, a company offering real-time supply chain visibility solutions.

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Beyond meeting regulatory requirements, a safer food supply chain also makes good business sense. "What's probably at the top of everyone's list in actual business terms is going to be your dollars lost trying to avoid large, spoiled loads," Simons says. "A full truckload of berries, for example, can cost over $100,000 and will spoil mid transit if you can't detect a problem — and act on it."

Temperature-monitoring technology offers previously unavailable visibility during transit and captures critical information that helps companies avoid bigger issues.

> **You could transport goods and not monitor at all, and everything could turn out fine, but if you don't have that information, it's going to lead to spoiled products — and the number one concern is always going to be consumer safety.**
>
> **MICHAEL SIMONS**
> Account Executive at Tive

Simon notes, "Where Tive helps is by avoiding spoilage wherever we can — and, if it occurs, we have the information to act on it."

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Audit Trails & Compliance

While FSMA requires shippers to keep temperature data records, maintaining a clear audit trail remains a challenge for many in the industry.

Part of the problem is that some companies still manually track and record data. As a result, even if these companies have the information needed for compliance purposes, they struggle to collect, analyze, and share it with partners or regulators.

In many cases, paper records are available, but the company can't locate or access them easily. Smart temperature loggers that automatically send data to the cloud resolve this issue by collecting and organizing temperature information, which helps their supply chain team and partners comply with laws and regulations.

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Customers also benefit from improved information management. For example, a 20-year customer of OBE Organic once missed an important email, which caused them to fail to apply for a license to import a beef shipment into an Asian country. This mistake would have cost the customer AU$20,000 to return the shipment to Australia.

However, OBE Organic was able to share a shipment visibility link from the Tive platform with Australian Government Trade Officials, which verified the beef's location in Asia and resulted in officials working with local government authorities to obtain clearance. OBE Organic, the customer and government officials could view clearance and delivery in real time as they watched the truck leave the airport, go to the warehouse and deliver the meat to the customer.

Smart temperature logging technology can also help a team spot problem areas that need improvement. While keeping historical records reveals operational trends that may influence future partnership decisions for the company, it can be difficult to identify and analyze these trends using manual databases and spreadsheets.

A smart temperature data logging solution ensures that the supply chain team can get the temperature information and insights they need to make informed decisions about how they can improve operations with a particular supplier or transporter. In addition, if the team uses real-time trackers, they can identify excursions immediately and analyze the data from these shipments to spot patterns related to certain routes or carriers — which can help inform them on how to eliminate future issues.

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Trust in the Supply Chain

Trust between companies is critical when moving perishable goods. Shippers have to trust that carriers will transport products safely and quickly, and carriers must trust partners to uphold their agreements to pay in full and on time. Any strain on this relationship could result in delivery delays and headaches for all parties.

The promise of added trust is a major draw for investing in a temperature tracking solution, especially in an industry that relies heavily on trust. In the food industry, a food company needs to trust in its suppliers and transporters — and vice versa. This trust forms strong relationships, which helps companies work through problems. For example, if a sensor is not working or the supply chain team can't get a report, the food company needs to trust its supplier to the extent that it can make informed decisions.

This trust also enables companies to be more open and transparent with suppliers and transporters, and a digital temperature tracking solution supports this need for openness and transparency. The technology enables supply chain teams to share final port documents with everyone involved — so everyone knows what's happening and who's responsible and accountable if a defect occurs. In turn, this openness and transparency further bolster trust across the supply chain.

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Liability & Accountability

Temperature tracking and monitoring ensure food safety and provide traceability. However, a good system also helps you know who is responsible for what. It should help you see where problems occurred, decide how to avoid them in the future, and work with partners to improve systems and processes.

Without temperature tracking and logging, this type of accountability can be hard to come by. If there is a defect in a shipment at any point in time, a shipper could claim they brought the product in at the proper temperature, and the transporter could say the temperature was okay. Ultimately, it would be impossible to know what actually happened.

With today's temperature tracking technology, supply chain teams have access to timely and reliable data. As a result, everyone is more aware of their own requirements, duties and responsibilities.

> **At OBE Organic, Tive's technology helps give us more insights into what's happening to our products in transit, which we need for risk mitigation in a world of so many unknowns.**

DALENE WRAY
Managing Director at OBE Organic

Tive's real-time visibility solutions can:

- **Provide reassurance that a 3PL is meeting obligations.**
  If the company's third-party logistics partners are not meeting their obligations, it is not guaranteed that the meat is maintained at the correct temperature while in transit. Real-time data helps clarify who is responsible when a temperature excursion occurs to support successful claims.

- **Reduce customer claims and rejections.**
  For example, when a customer in Asia raised concerns about the appearance of an organic chilled beef shipment because it didn't look like previous beef shipments, OBE Organic was able to review data and determine a temperature excursion did not occur. The company was then able to educate the customer that grass-fed beef has darker meat color and less marbling than grain-fed beef. This combination of data from the Tive Solo 5G Tracker and education helped OBE Organic avoid a claim.

Tive account executive Michael Simons adds that having that accountability is also important from a liability and insurance standpoint.

"You have to be able to provide that data to your carriers when you're going to file a claim that's based on spoilage or based on temperature," he explains. "Having those data points — whatever the requirements may be for certain insurers or certain carriers — is critical. When you're filing a claim, not having that information can change a $50,000 claim to a $10,000 claim."

Many temperature-based claims require you to discard the product or come to some type of agreement if you want to meet FSMA regulations. Without the right data, Simons says, your claim could fail, and "you could end up with a total loss without it, and potentially, penalties as far as how your operation's concerned."

The bottom line? Everyone needs to be accountable at every step to ensure the safety and integrity of the product — and with cloud-based visibility platform and modern loggers or trackers, that becomes a reality.

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Sustainability

The push for greater sustainability is happening across nearly every industry, and the food industry is no exception. The pressure comes not just from regulators but from the industry's workers, customers, and consumers, too.

Wray notes that she hears demands from across the globe for businesses like OBE Organic to focus on sustainability — and the company is fully dedicated to answering this call.

Sustainability Report 2022/2022 provides a snapshot of the company's continual efforts to deliver on this mission. The report discusses updates on OBE Organic's sustainability program — FLOURISH — which is mapped against the UN SDGS and is consistent with the Australian Meat Industry's strategic priorities.

One of the integral factors to the company's sustainable business strategy is lifetime traceability of organic livestock and products. Cloud-based shipment location and condition tracking solutions such as Tive's is essential to achieving this goal. Combining cell networks, Wi-Fi and GPS tracking, it provides full visibility of OBE Organic beef location and temperature, regardless of where it is in the world. By ensuring product can be fully tracked, it can help authenticate provenance claims and reduce product fraud.
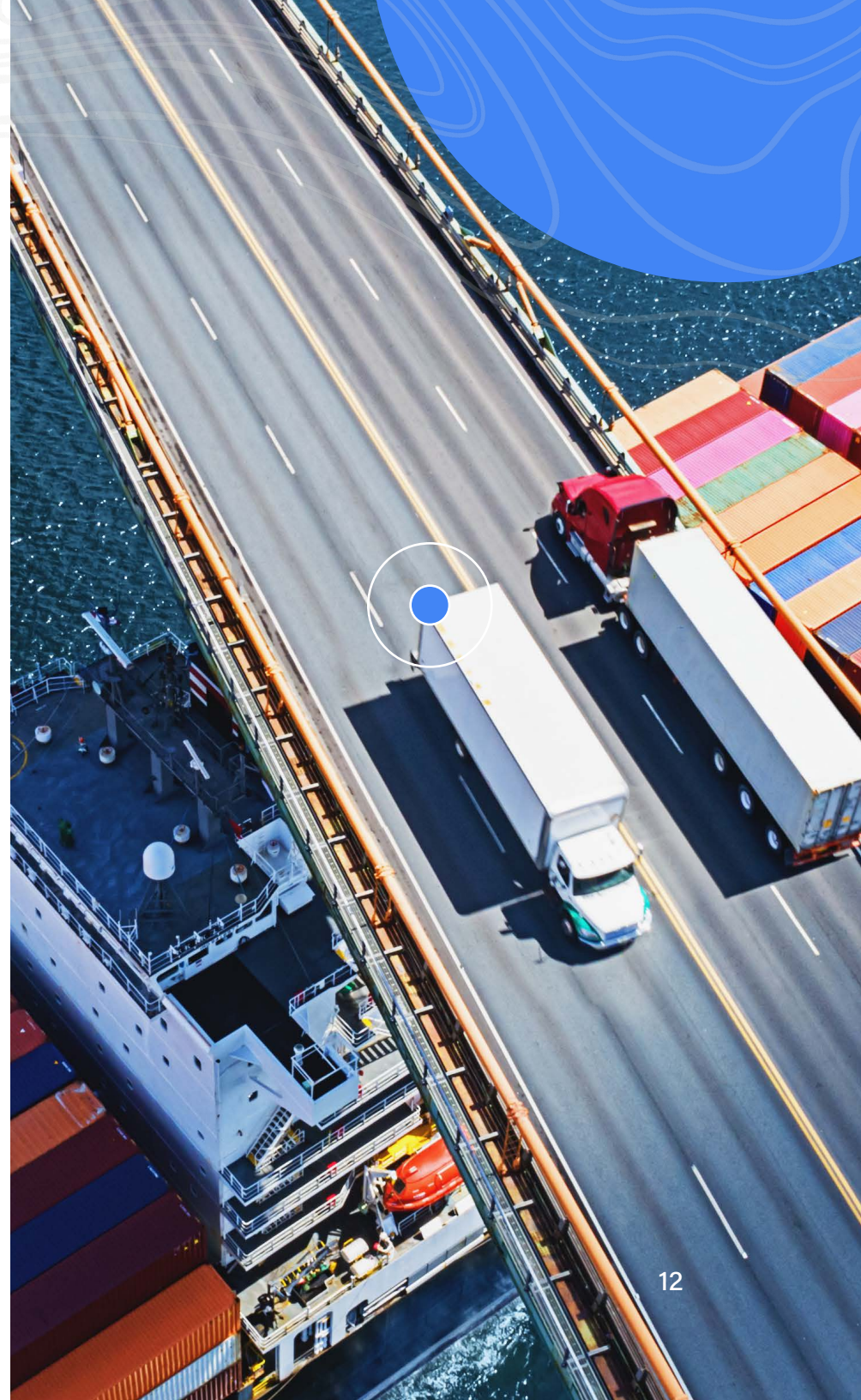
Technology Fills the Gap

Technology is the solution for many of the industry's friction points. But, while most food and beverage companies already use technology to monitor shipments, they still face gaps in quality assurance and food safety.

The reason for these gaps comes down to an old-school mentality, says Simons. "When you're dealing with different kinds of perishables, it's a system that has been in place for quite a while, so there are a few blind spots that come about."

And while temperature monitoring is certainly not new to the industry, there are increasingly affordable and simpler ways to achieve it.

> **It's really about shippers of sensitive products utilizing all the available tools. Traditionally, some of the technology that's been implemented has been more just designated to packaging or refrigerated trailers when needed. So adding in this data — actually having data to point to — is really something that shippers can focus on.**

MICHAEL SIMONS
Account Executive at Tive

Temperature monitoring has emerged as a solution to accessing that data. It is a cost-effective, easy way to gain actionable visibility into your supply chain. With this visibility, you can ensure food safety, audit carriers and processes, and verify that the actions you're taking are actually working.

While there are many solutions for temperature monitoring and tracking available — including real-time tracking and manual data loggers — it's ultimately all about "getting data that you can act on," says Simons.

Choosing a Temperature Monitoring Solution

Selecting the right temperature-monitoring solution comes down to two main considerations — the overall value of your shipments and the temperature sensitivity of your shipments.

Understanding each of these considerations and how disruptions can affect each — and, in turn, your overall operations — helps you determine which type of solution is best for you. While traditional data loggers may get the job done from a compliance standpoint, there are better options available today.

Real-Time Temperature Tracking

Real-time shipment location and condition trackers, such as Tive's Solo 5G trackers, provide the most robust, end-to-end visibility solution for perishable shipments. Temperature and location data is created and reported on in real time, and the cloud-based platform delivers instant alerts when temperature excursions occur — so teams can take immediate action to avoid spoiled or damaged products.

Factors to note:

- Real-time tracking may carry a price premium over a typical passive data logging solution, which makes it a better fit for shipments that are higher in value and highly temperature sensitive. Saving a $50,000 truckload of produce that would otherwise have arrived spoiled due to a reefer truck going out of the correct temperature range is well worth the comparatively small cost of having real-time visibility.

- It's also important to understand that having live data is only useful if you have the ability to act on it. Your team should be set up to receive temperature alerts and have standard operating procedures in place should excursions occur — such as which carrier to call or who to notify. If you don't have the dedicated resources to monitor live shipments, full-solution companies such as Tive provide 24/7 Live Monitoring services that act according to your SOPs to take action and address in-transit issues for you.

Cloud-based Temperature Logging

Modern, cloud-based temperature loggers enable you to monitor the temperature of your shipments and provide detailed records of the temperature throughout transit upon approval.

Factors to consider:

Ease of Use

Ease of use is one of the biggest differentiators between a traditional data logger and a modern, cloud-based data logger.

What differentiates cloud temperature loggers such as Tive's? The digital audit trail, according to Simons. With a traditional data logger, someone has to manually pull data from the device; with a cloud-based logger, data is immediately uploaded to the cloud.

"There's no labor involved in setting that up yourself, and the audit trail is immediately digital," explains Simons. He also notes Tive Tag — a paper-thin, cloud-based logger about the size of a shipping label — can be operated with any NFC-capable smartphone. "So basically anyone that has Tap to Pay on their phone can operate the Tag."

Low Cost

Another major benefit of a modern temperature logger such as Tive Tag is its low cost — especially when accounting for its vast functionality. "It's on the low end of the spectrum in terms of cost, but it's on the high end of the spectrum in terms of the technology involved," explains Simons.

Data loggers may not provide real-time visibility into your shipments while in transit, but you can access actionable data — both during and after the fact — to identify any possible excursions, which helps you improve processes going forward.

"We have the temperature, we know the time it's at, and we can get it fixed," says Simons. "When you're talking about temperature loggers, we're going to be looking at a data sheet that's going to give us times and temperature of the full leg after the fact. It's a bit more cost effective to do it that way, especially with less critical products."

Buy-in Begins
with All Stakeholders

Shippers and logistics providers have many options when it comes to temperature tracking, but the hardest part can be committing to change. Many companies still rely on outdated technology such as traditional data loggers, which were once the standard.

Traditional data loggers aren't without benefits. They are simple to operate. You simply place them inside the truck, container or pallet, and that's all you need to do until you pull the receipt upon delivery. Convincing the C-suite to buy into digitizing these efforts might be a major lift for many logistics managers to overcome — but it is the best way forward.

Overcoming this hurdle requires getting buy-in from more than one stakeholder, says Simons. "It's not as simple as just getting a logistics manager or supply chain manager excited about digitizing the format," he states. "It's about discussing it with people who have boots on the ground — the people who are actually using it. Then it's about improving that return on investment when you're talking to more C-level executives and explaining the benefits of actionable data."

Buy-in from the top down is never easy, but the value gained from actionable data is undeniable. Better food safety, added trust and proven accountability are just the beginning. Ultimately, temperature monitoring is the key to customer satisfaction.

Since the transportation of perishable foods is less visible, it's easy for consumers to assume that quality is about "good luck" with a certain retailer or brand. However, the difference between being a preferred customer and retailer brand is not about being lucky — it's about what company is using the best technology to maintain quality at every point of the product journey.

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ABOUT TIVE

Tive is a leading provider of real-time supply chain visibility insights that help logistics professionals actively manage the location and condition of their shipments. With Tive, shippers and logistics service providers (LSPs) eliminate delays, damage and shipment failures. Tive's solution provides data generated by its industry-leading trackers, allowing customers to actively monitor shipments, improve customer experience and unlock supply chain insights in an actionable, real-time manner.

Tive's Solo 5G trackers use the latest global cellular, Wi-Fi, and GPS technology to report real-time, validated sensor data to the Tive cloud platform, providing end-to-end visibility and making it easy to monitor the location and condition of perishable shipments.

Tive Tag is a thin, flexible label that provides end-to-end cold chain monitoring of temperature-sensitive products — the easiest-to-use and most cost-effective solution for first and last mile cold chain visibility. Simply stick, tap the Tag with an iPhone or Android phone to begin a shipment, then tap the Tag again upon arrival to instantly upload all shipment temperature and location data to the Tive Tag cloud platform. Using the mobile app or desktop platform, you can view all historical shipment data — and maintain an audit trail for your compliance and quality control needs.

For more information, visit https://www.tive.com/.

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