Food Industry Wireless Monitoring

Nine important factors for
a truly future-proof system.

Speakers

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Agenda

Wireless Monitoring – what & why?

1. Parameters

2. Hardware

3. Data storage access

4. Sensor connection type

5. Installation

6. Alarm Type

7. Calibration

8. Cost

9. Ongoing support

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Case Study

Live Q&A

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Common scenarios

1. No automated system currently in place. Performing regular manual checks.

2. Using a system but it is old, unreliable or limited in its usefulness, and would benefit from an upgrade.

3. Already have an up-to-date system that is working well, but you're curious about maximising its usefulness.

Wireless monitoring: what & why?

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Commercial Director,
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What is wireless monitoring?

- A network of sensors
- Measuring temperature and/or other parameters
- Sensors 'talk' to a base station or access point
- Measure data values in real-time
- Alarm management
- Data reporting/analysis for monitoring visibility and audit trails

BRCGS Food Safety V9

4.15 – Storage Facilities

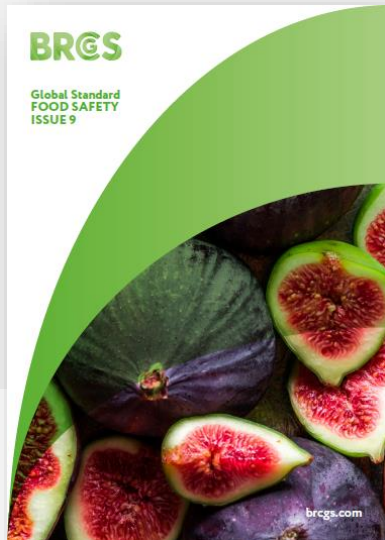| 4.15.3	Where temperature control is required (e.g. for raw materials, semi-finished materials or final products), the storage area shall be capable of maintaining product temperature within specification and operated to ensure specified temperatures are maintained. Temperature recording equipment with suitable temperature alarms shall be fitted to all storage facilities or there shall be a system of recorded manual temperature checks, typically on at least a 4-hourly basis or at a frequency which allows for intervention before product temperatures exceed defined limits for the safety, legality or quality of products.

6.1 – Control of Operations

6.1.5	Where variation in processing conditions may occur within equipment critical to the safety or quality of products, the processing characteristics shall be validated and verified at a frequency based on risk and performance of equipment (e.g. heat distribution in retorts, ovens and processing vessels; temperature distribution in freezers and cold stores).
6.1.6	In the event of equipment failure or deviation of the process from specification, procedures shall be in place to establish the safety status and quality of the product to determine the action to be taken.

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Factor #1

Parameters

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Commercial Director,
Klipspringer

Parameters

- What parameters do you need to measure?
    - Food safety / CCPs
    - Product quality
    - Engineering

- Which parameters are most critical?

- Are there any other manual checks that could be automated?

Parameters

Some of the most common measurables:

Temperature	Humidity	Energy	Door Contact
Pulsed	Pressure	CO_2	Equipment Status Monitoring

Factor #2

Hardware

Pete Carlyon
Commercial Director,
Klipspringer

Hardware

- Physical base station or online only (or combination)

- Sensor types – e.g. air sensors, core temperature probes

- Heat resistance

- Waterproofness & IP-rating

- Battery life & accuracy

- Location/accessibility

- Sensor mounting

- Sensor positioning – product/room sensor

Factor #3

Data Access

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Commercial Director,
Klipspringer

Network-based

Pros

- Often deemed more secure / harder to hack
- No or low ongoing hosting costs
- Often preferred by I.T. departments

Cons

- Sometimes harder to access from home / off the network

Cloud-based

Pros

- Easier to access from multiple locations
- Better suited for central management teams requiring multi-site visibility and data access

Cons

- Ongoing licensing fees
- Potentially less secure
- Reliant on stable internet provision

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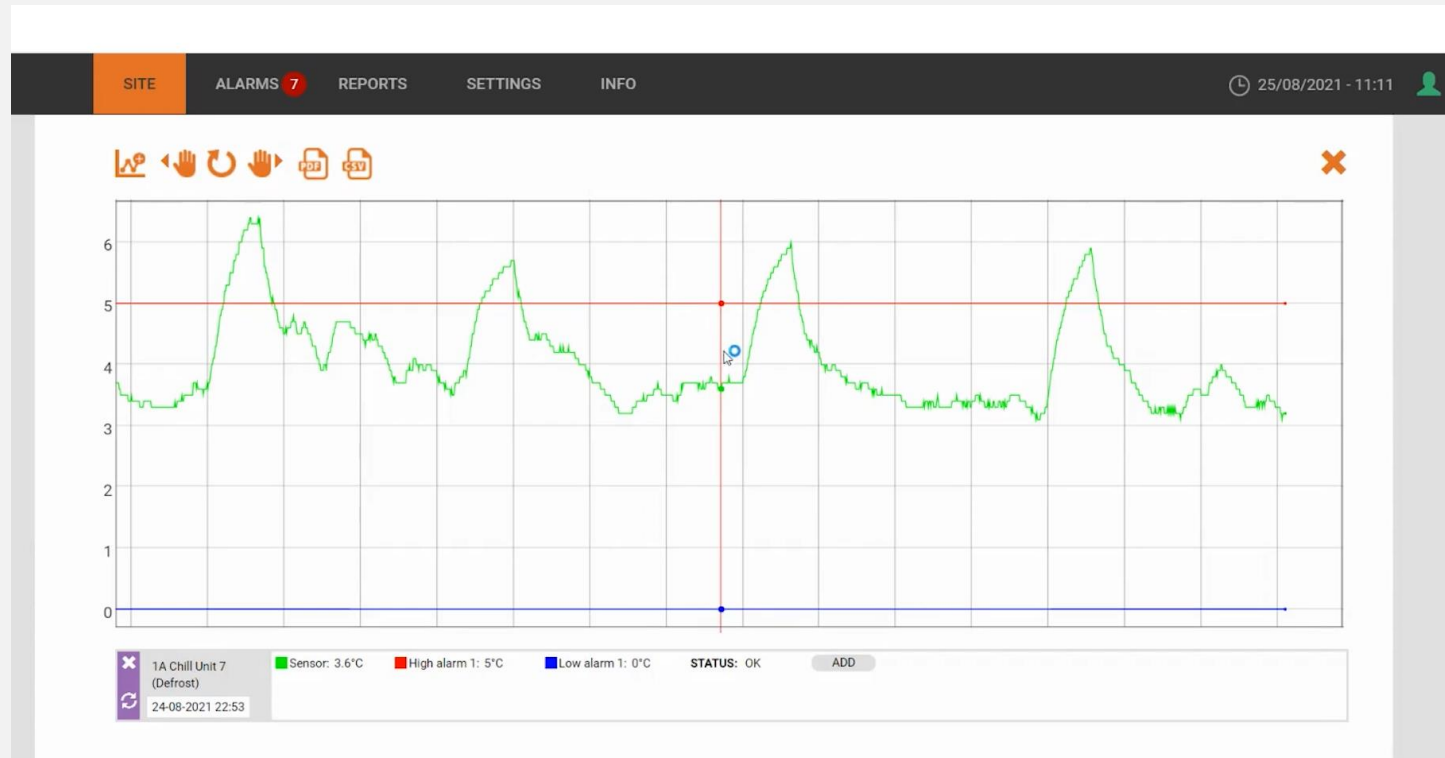Compliance with confidence

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Other considerations

- Do the sensors have their own internal memory?

- What level of data security does the system provide? E.g. a back-up in the event of power failure or primary data loss

- How easy is it to interpret, inspect and verify the data? E.g. graphical data presentation

Examples of data access

Examples of data access

Factor #4

Sensor Connection

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Commercial Director,
Klipspringer

Wi-Fi

- An easy and cost-effective option if Wi-Fi is already in place
- Reliant on the coverage and quality of the site's Wi-Fi network
- Can be expensive to install in the first instance
- Difficult to penetrate chillers or freezers

Bluetooth

- Sensors talk to a phone or tablet via Bluetooth connection

- Dependent on proximity and needs to be within a close range

- Not well suited to large manufacturing sites looking for cross-site real-time monitoring

- Typically inexpensive and widely available

Radio Frequency

- Strongest and most reliable form of wireless data transfer
- Can easily be extended via repeaters/boosters
- Generally lower battery consumption
- Typically the preferred option for larger site systems

Self-installation

- Low/no cost
- Can be done at your own pace
- Can the equipment you need to install be pre-configured for easy installation?
- Consider if Engineering/I.T. involvement is required
- Avoids delay if installation is required urgently, e.g. for an upcoming audit

Professional installation

- Removes the hassle and time of self-installation
- Typically comes with higher cost, especially for large/complex systems
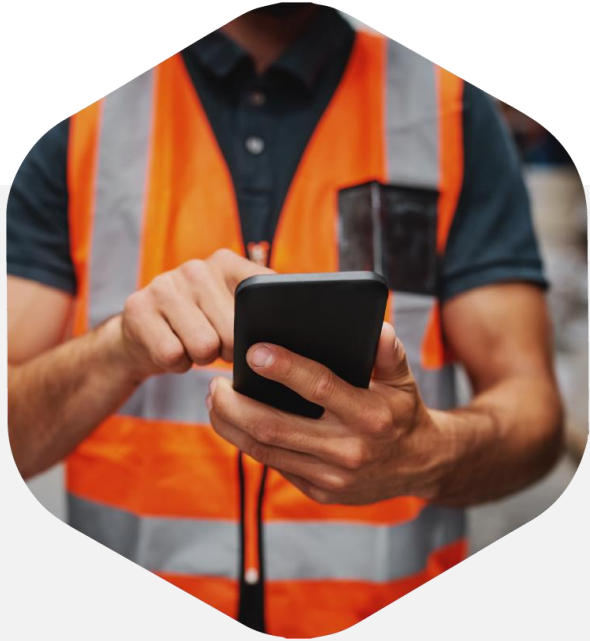- Typically includes on-site training
- Peace of mind and audit-readiness

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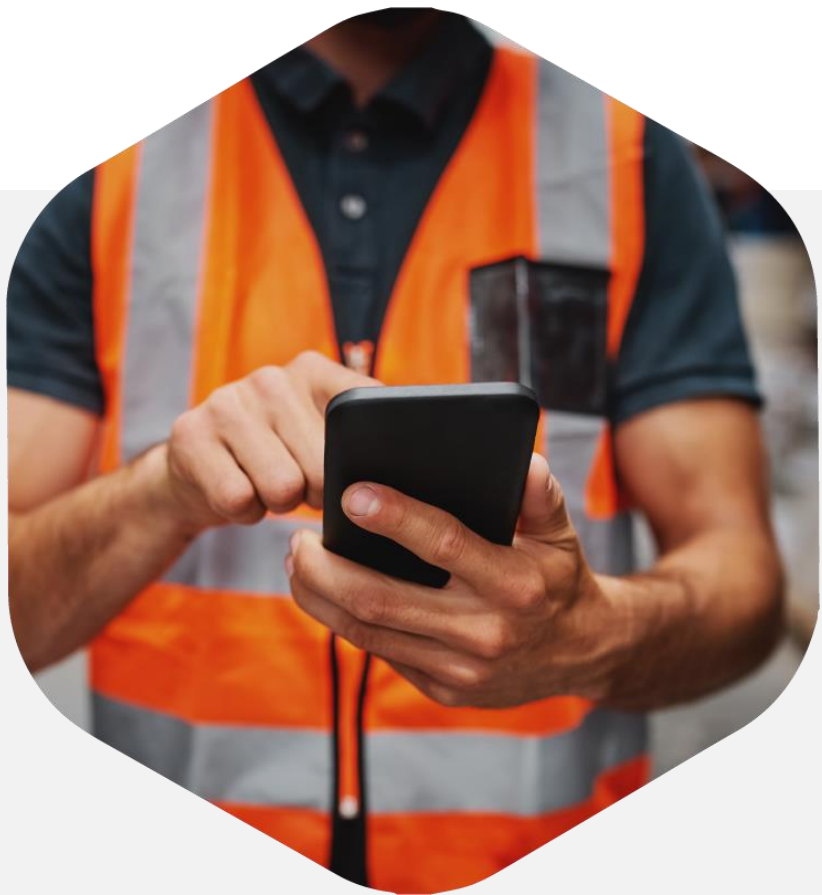
Factor #6

Alarm Type

Radek Tameczka
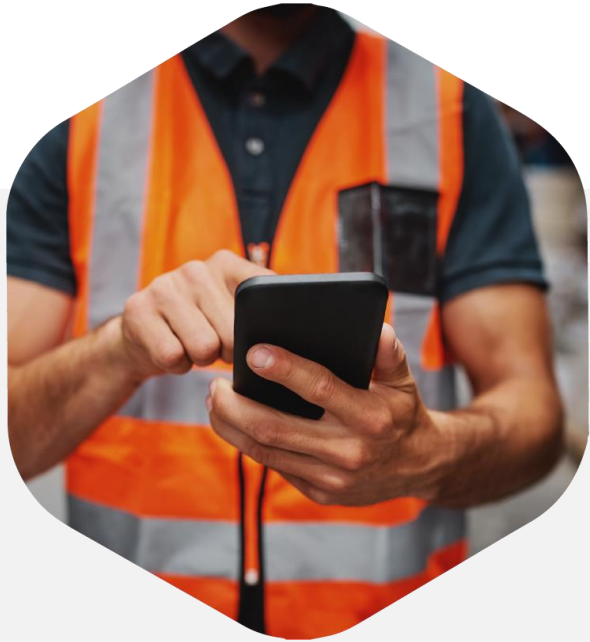Laboratory Manager,
Klipspringer

Alarm types

Most common types:

- Email
- Text
- Audible alarm sounder
- Visual alarm beacon

Alarm management

Other considerations when setting alarm profiles:

- Don't set alarms from day 1 – see what the running pattern is first

- Consider alarm delays

- Who should be alerted? Don't alert everyone!

- Have an internal procedure for alarm management and issue escalation

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Factor #7

Calibration

Radek Tameczka
Laboratory Manager,
Klipspringer

Calibration

Initial calibration

- What calibration type do you require?

- What calibration points do you require?

Ongoing calibration/validation:

- On-site
    - External engineer
    - Consider an additional calibration validation sensor
- Off-site
    - Sending sensors to a calibration laboratory
    - Need to consider back-up plan while equipment is away

Factor #8

Cost

Radek Tameczka
Laboratory Manager,
Klipspringer

Budget considerations

Factors influencing cost:

- Number of monitoring points
- Size of site (is signal-boosting required?)
- Installation method
- Check for any ongoing licensing and support fees
- Calibration – initial & ongoing

Typical cost examples

Factors	Scenario 1	Scenario 2
Size of facility	Small	Large
No. of monitoring points	<5	>25
Parameters	Temperature only (-20 to 25°C)	Multiple parameters; mainly high temperature, some humidity (rH)
Accessibility to sensor position	Easy access	Easy access
Onsite installation and annual service/calibration	Not required	Professional installation and ongoing technical support
UKAS calibration	Not required	Yes
Alarming	Basic	Advanced
Pricing Guide	£500	£8,000-£10,000

Budget considerations

Other considerations/justifications:

- Current labour cost of manual checks (e.g. QA checks on multiple chillers every four hours)
- What is your current annual calibration/service budget?
- What is your stock value / cost of wasted product?
- Cost of damaged brand reputation
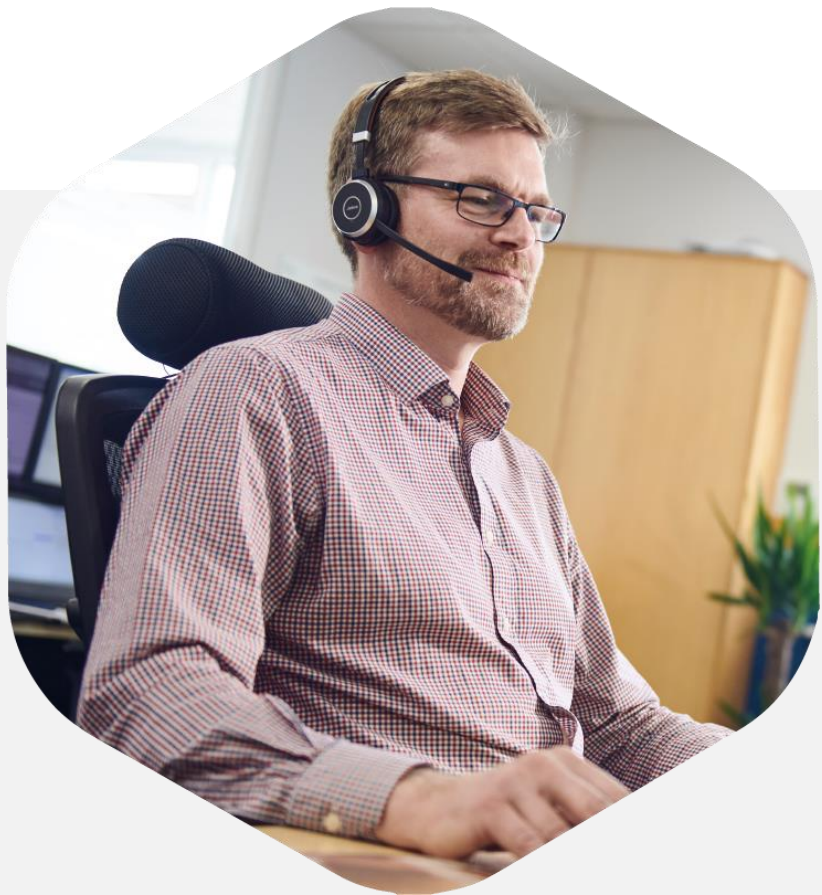
Factor #9

Ongoing Support

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Laboratory Manager,
Klipspringer

Ongoing support

What ongoing support do you require?

- Software updates

- Hardware servicing & maintenance

- Calibration

- Product warranty

- Technical advice / troubleshooting

- On-site support

- SLA (Service Level Agreement)

Quorn Foods

Wireless site monitoring for a
leading food manufacturing brand.

Kenny Edwards
Quality Manager, Quorn Foods

Re-Cap & Q&A

Further information & support

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Thank You