



BioDtex Case Study

BioDtex™

Case Study: BioDtex UV Biofilm Detection for Microbial Risk Reduction in a Fresh Produce Manufacturing Environment

1. Background

Fresh produce manufacturers face constant pressure to maintain hygienic conditions due to the substantial risk of microbial contamination. This contamination can arise from biofilm build up on food contact surfaces and equipment, leading to potential food safety failures, product recalls, or consumer illness.

A mid-sized fresh produce processor handling leafy greens and pre-cut vegetables, sought to enhance its hygiene verification procedures, targeting difficult-to-detect biofilm formations and reducing the risk of environmental indicator organisms (*Enterobacteriaceae spp.*, *Coliform spp.*, *Listeria spp.* & *E. coli*).

2. Challenge

- Traditional visual inspections and ATP swabbing methods failed to consistently detect persistent contamination.
- Routine cleaning and disinfection protocols did not fully eliminate micro loading risk or biofilm-forming bacteria.
- Positive environmental sampling results occurred intermittently, triggering expensive line shutdowns and retesting.

3. Solution: Integration of BioDtex UV Biofilm Detection Unit

In Q1 of the year, the site introduced the **BioDtex UV Lamp**, a handheld biofilm detection tool using UV-fluorescence technology to visualise biofilm residues invisible to the naked eye. The unit was deployed for:

- Routine cleaning and disinfection validation & verification.
- Targeted investigative swabbing.
- Enhanced positive release (EPR) verification before line release post hygiene.

4. Implementation Strategy

Baseline Mapping & Training

- a) BioDtex units were used during post-cleaning inspections over a 2-week baseline period to identify high-risk zones (e.g., conveyor belt undersides, cutting blades, drainage zones).
- b) Hygiene team members were trained to identify UV-reactive signals and link these to potential microbial reservoirs.

Targeted Swabbing & Verification

Once biofilm presence was identified with BioDtex, swabs were taken from fluorescing zones and tested for:

- c) *Listeria spp.*
- d) Environmental indicator organisms (*Enterobacteriaceae spp.*, *Coliform spp.*)
- e) Swabbing was targeted pre and post hygiene for zones showing repeated UV positive visual results.

Enhanced Positive Release Protocol

- f) Prior to product release, the BioDtex unit was used as part of a final QA verification.
- g) Only areas free of biofilm or bioluminescence passed to product release, with swab tests confirming negative results for pathogens or high-risk indicators.

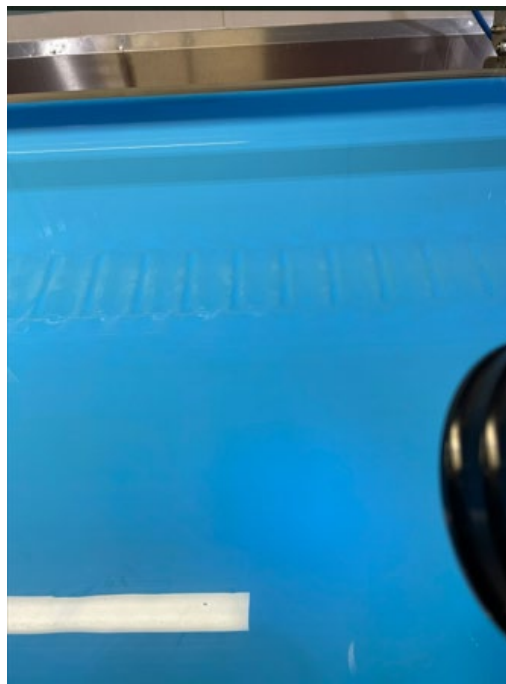


5. Results

Pre hygiene, visual detections:



Post hygiene, clear of visual detections:



Microbial Risk Reduction

Within 4 weeks of implementation:

- Micro loading risk areas were now defined to specific zones and isolated machinery & equipment.
- No positive release delays occurred.

Efficiency in Investigations

- Root cause analysis timelines shortened when BioDt看 was used to pinpoint contamination sources.
- Detection of biofilm hotspots led to revised cleaning SOPs for specific components, especially under belts, rollers and junctions.
- Enhanced compliance with BRCGS Issue 9 – Clause 4.11.1 (Cleaning Effectiveness Validation).

Test Results:

Test - Status	Test - Evaluation	Test - Test	Test - Result	Test - Result Approved Date	Sample - Sample No.	Sample - Received Date	Sample - Sample Description
Cert. Approved	Pass	Total Viable Count, 2 days 30°C	<10	07/06/2025	SBN8493656	05/06/2025	Hygiene Swab - Top roller
Cert. Approved	Pass	Enterobacteriaceae (presumptive)	<10	06/06/2025	SBN8493656	05/06/2025	Hygiene Swab - Top roller
Cert. Approved	Pass	Escherichia coli (β-Glucuronidase positive)	<10	06/06/2025	SBN8493656	05/06/2025	Hygiene Swab - Top roller
Cert. Approved	Pass	Total Viable Count, 2 days 30°C	<10	07/06/2025	SBN8493655	05/06/2025	Hygiene Swab - Bottom Roller
Cert. Approved	Pass	Enterobacteriaceae (presumptive)	<10	06/06/2025	SBN8493655	05/06/2025	Hygiene Swab - Bottom Roller
Cert. Approved	Pass	Escherichia coli (β-Glucuronidase positive)	<10	06/06/2025	SBN8493655	05/06/2025	Hygiene Swab - Bottom Roller
Cert. Approved	Pass	Total Viable Count, 2 days 30°C	<10	07/06/2025	SBN8493654	05/06/2025	Hygiene Swab - Swan Neck Belt
Cert. Approved	Pass	Enterobacteriaceae (presumptive)	<10	06/06/2025	SBN8493654	05/06/2025	Hygiene Swab - Swan Neck Belt
Cert. Approved	Pass	Escherichia coli (β-Glucuronidase positive)	<10	06/06/2025	SBN8493654	05/06/2025	Hygiene Swab - Swan Neck Belt
Cert. Approved	Fail	Total Viable Count, 2 days 30°C	>3.00E+03	07/06/2025	SBN8493653	05/06/2025	Hygiene Swab - Top roller
Cert. Approved	Fail	Enterobacteriaceae (presumptive)	240	06/06/2025	SBN8493653	05/06/2025	Hygiene Swab - Top roller
Cert. Approved	Pass	Escherichia coli (β-Glucuronidase positive)	<10	06/06/2025	SBN8493653	05/06/2025	Hygiene Swab - Top roller
Cert. Approved	Pass	Total Viable Count, 2 days 30°C	10	07/06/2025	SBN8493652	05/06/2025	Hygiene Swab - Bottom Roller
Cert. Approved	Pass	Enterobacteriaceae (presumptive)	<10	06/06/2025	SBN8493652	05/06/2025	Hygiene Swab - Bottom Roller
Cert. Approved	Pass	Escherichia coli (β-Glucuronidase positive)	<10	06/06/2025	SBN8493652	05/06/2025	Hygiene Swab - Bottom Roller
Cert. Approved	Fail	Total Viable Count, 2 days 30°C	>3.00E+03	07/06/2025	SBN8493651	05/06/2025	Hygiene Swab - Swan Neck Belt
Cert. Approved	Fail	Enterobacteriaceae (presumptive)	>1.50E+03	06/06/2025	SBN8493651	05/06/2025	Hygiene Swab - Swan Neck Belt
Cert. Approved	Pass	Escherichia coli (β-Glucuronidase positive)	<10	06/06/2025	SBN8493651	05/06/2025	Hygiene Swab - Swan Neck Belt

6. Conclusions & Lessons Learned

- The BioDtex UV Detector provided a non-destructive, rapid, and cost-effective tool for identifying microbial risks otherwise missed by traditional methods.
- Its integration into enhanced positive release procedures ensured greater confidence in product safety and regulatory compliance.
- The combination of real-time visual confirmation and targeted microbiological testing created a proactive hygiene culture with clear, visual accountability.

7. Future Directions

- Site are now exploring the expansion of BioDtex deployment into incoming raw material inspection areas.
- A quarterly trend report will be established to compare seasonal microbial risk variations and to help optimise cleaning frequencies.



8. Further Information

The Kersia UK website contains additional information about the BioDtex Biofilm Detection lamp, including an independent Campden BRI report that assessed the full capabilities of the unit.

To access this information, please click on the link below or scan the QR code:

[BioDtex Biofilm Detection Lamp](#)

