Application Case Study

Application: Cleaning printed circuit boards (PCBs)		**Date:** 3/12/2024
Serial number: T019	**Machine model:** Nu/Clean 324 XLR-FB	
Machine type: Conveyorized Belt	**Industry:** Aerospace and Defense	

Customer summary:	A leading aerospace and defense company specializing in advanced technology solutions, including business jets, combat vehicles, and communication systems.
Item to clean:	High-density PCB assemblies with low standoff components.
Contamination:	Flux residues, ionic contamination, and particulates.
Cleanliness requirement:	High-reliability removal of ionic and non-ionic residues.
Dryness requirement:	Completely dry assemblies with no trapped moisture.
Production rate:	Inline continuous cleaning for medium-to-high volume production.
Process parameters:	Heated wash and rinse stages, flood immersion, air knifes, thermal dry

Customer background: A global aerospace and defense company with a diverse portfolio, providing cutting-edge solutions for military, aerospace, and commercial sectors.

Challenge: The customer requires a high-reliability**,** repeatable cleaning process for high-density electronic assemblies. Printed circuit boards (PCBs) with low standoff and densely populated components must be cleaned thoroughly while minimizing chemical drag-out, preventing contamination between stages, and ensuring consistent process control. Additionally, the system must support production-level throughput and meet stringent quality and environmental expectations.

Solution: An inline aqueous cleaning system with Flood Box™ technology was selected to fully submerge PCBs during washing, improving cleaning beneath low standoff and high-density components. The process integrates wash, rinse, and drying stages to deliver consistent, high-reliability results in a production environment.

Cleaning Method:

Inline, multi-stage aqueous cleaning process including:

- Flood immersion wash
- Spray-in-air wash and rinse
- Isolation rinse to prevent drag-out
- Recirculating heated rinse
- Final freshwater rinse
- Air knife and thermal drying

The Flood Box fully submerges assemblies, ensuring complete penetration beneath components and removing trapped contaminants.

Alliance Manufacturing, Inc.

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