

CASE STUDY



Protecting Lives and Efficiency at Sea with Air Dynamics' LRS II System: Maritime Laundry Lint Collection

Customer Overview

Princess Cruise Lines is a globally recognized leader in the cruise industry, operating a modern fleet of ships that serve millions of passengers annually. Known for delivering exceptional guest experiences, the company prioritizes safety, efficiency, and innovation in every aspect of its operations. With a commitment to continuous improvement and regulatory compliance, Princess Cruise Lines actively invests in technologies and partnerships that enhance onboard safety and sustainability.

Project Overview

When you're responsible for the safety and comfort of thousands of passengers and crew aboard a vessel in the middle of the ocean, there's no room for oversight—especially when it comes to fire prevention. Princess Cruise Lines understood that their on-board laundry systems presented an ongoing risk that couldn't be ignored.



The Challenge

Their challenge wasn't unique—lint buildup in ductwork is a known fire hazard in the maritime industry. But the customer's scale and operating environment are very unique. With seven high-volume dryers running nearly around the clock in each ship's laundry, the sheer volume of lint being generated was staggering. While their legacy systems handled basic filtration, they weren't keeping up. Worse, they created secondary risks—requiring labor-intensive maintenance, taxing the energy systems, and failing to meet modern safety expectations.

The wake-up call came not just from past industry incidents—like the 2015 fire aboard a Carnival cruise ship—but from the growing scrutiny of maritime safety regulators like the U.S. Coast Guard, who flagged laundry fires as a key risk in cruise operations.

The customer needed a solution that didn't just check a box—they needed one that would eliminate the risk, enhance efficiency, and last.

The Solution

Why Choose Air Dynamics

The customer admitted that what stood out about Air Dynamics was their commitment to designing a custom, turn-key system. This wasn't an off-the-shelf fix. Their team came aboard, studied the unique layout of the ship's laundry room, and mapped out a solution tailored to the customer's exact conditions—from airflow and dryer configuration to ducting pathways deep within the ship's structure.

The proposed solution — **the Lint Removal System II (LRS II)** — wasn't just an upgrade. It was a complete transformation of how the cruise line handled lint filtration.

What Changed with the LRS II

The LRS II delivered on every front:

- **Ultra-Fine Filtration:** The system filters lint down to 0.5 microns. That's far more advanced than the typical 200-micron filtration found in standard systems — critical for our high-volume operation.
- **Fire Mitigation:** The system includes mist suppression and optional water sprinkler capabilities, acting as a frontline defense to stop any spark from turning into catastrophe.
- **Energy Optimization:** With a 6:1 turndown ratio, the LRS II automatically adjusts fan speeds based on dryer load, cutting back energy waste. We immediately saw savings in fuel consumption and reduced strain on our systems.
- **Ease of Operation:** A built-in digital control interface made system coordination simple for our crew — another win in terms of safety and uptime.
- **Reduced Maintenance:** By eliminating duct buildup and optimizing flow, we no longer needed to schedule regular stack cleanings — a task that was both dangerous and costly.



LRS II Lint Removal System.

Results

Solutions the Customer Can Rely On

With two **LRS II systems** installed aboard the vessel, the customer has seen a measurable improvement—not just in system performance, but in peace of mind. Ducts stay clean. Dryers run more efficiently. And the risk of on-board fire has been dramatically reduced. More importantly, Air Dynamics' collaborative approach ensured that the solution was not just installed, but engineered around the reality at sea.

For Princess Cruise Lines, partnering with Air Dynamics wasn't just about compliance. It was about safety, efficiency, and setting the standard for what responsible maritime operation should look like. Their team delivered a truly customized solution—built for the challenges of marine life, and built to last.