

## WATER & ENERGY SAVINGS FOR DATA CENTERS



### FACILITY PROFILE

A hyperscale data center campus located in an active industrial zone. The facility's open-loop cooling towers are continuously exposed to high levels of wind-blown dust and airborne debris.

### PROBLEM

The facility was experiencing rapid debris buildup in its tower basins. This "dirt loading" was causing heat exchangers to clog, leading to frequent "high-approach" alarms on the chillers. Maintenance teams were forced to manually shovel out basins and mechanically "punch" chiller tubes twice a year to maintain cooling capacity.

### THE LAKOS SOLUTION

LAKOS Basin Sweeping systems were integrated into the cooling cells for continuous basin-sweeping and solids separation.

## THE RESULTS

- **Maintenance:** Manual basin cleaning was eliminated. Chiller tube cleaning intervals were extended from every **6 months to over 36 months**.
- **Thermal Performance:** Approach temperatures remained **within 1°C of design specs**, eliminating fouling-induced energy spikes.
- **Chemical Savings:** Eliminating solids that shield bacteria and consume additives maximized biocide and inhibitor efficacy, yielding a **12–18% reduction in annual chemical spend**.
- **Water Conservation:** Removing silt mechanically allowed the facility to safely increase its Cycles of Concentration (CoC), **reducing blowdown volume by 15–20%** and saving millions of gallons annually.
- **Return on Investment (ROI):** Lower PUE, reduced WUE sewer/water costs, and eliminated manual labor delivered a full capital investment **ROI in less than 14 months**.

## LAKOS BASIN-SWEEPING SYSTEMS

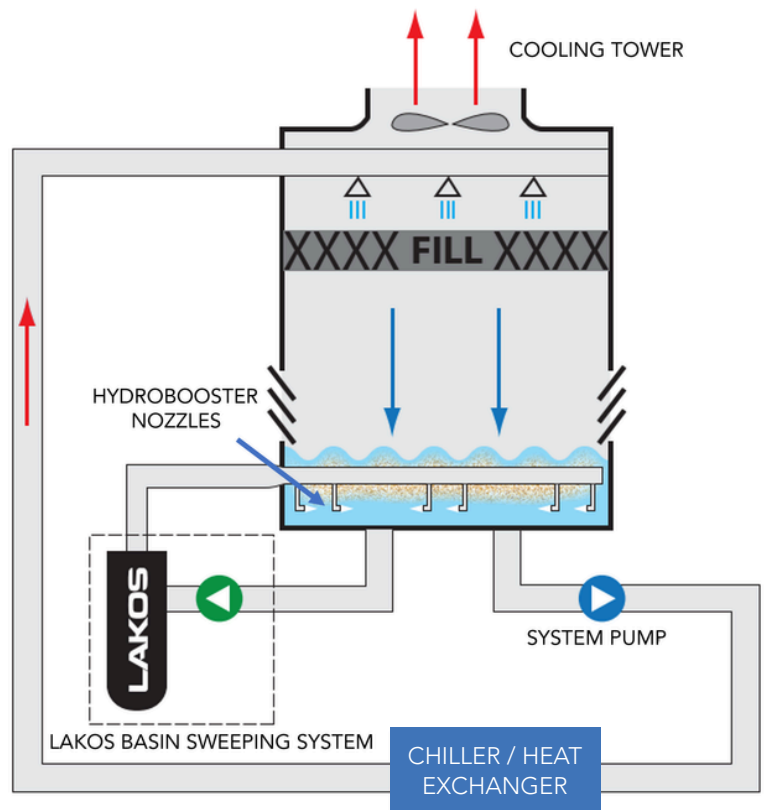
The LAKOS System provides continuous, non-barrier solids removal for data center environments without requiring system shutdowns or manual cleaning.

- **Active Basin Sweeping:** Engineered HydroBoosters™ sweep solids across the basin floor directly toward the filtration intake, preventing mud buildup. This active design ensures complete sweeping, whereas competing systems offer only localized agitation that leaves dead zones
- **Centrifugal Separation:** Centrifugal force spins out particles down to 44 microns. As a non-barrier method, it features no screens to clog, no filter media to replace, no backwash cycles, and minimal pressure drop.
- **Compact Footprint:** LAKOS systems offer the smallest footprint of any filtration technology, easily integrating into your system layout.
- **Optimal Filtration Range:** LAKOS centrifugal separation targets a filtration window of roughly 40–74  $\mu\text{m}$ , which balances effective solids removal with low maintenance. Finer approaches (1–10  $\mu\text{m}$ ) require frequent service, shorter component life, and higher lifecycle cost without demonstrated gains in system thermal efficiency. This aligns with ASHRAE and BSRIA guidance supporting a ~40–50  $\mu\text{m}$  routine threshold.
- **Maintenance-Free Operation:** The automated system periodically purges captured solids into a recovery tank or waste line, maintaining a clean cooling loop 24/7.

### LAKOS BASIN-SWEEPING SYSTEM



### TYPICAL LAKOS BASIN-SWEEPING INSTALLATION



LS-1077