



TOTAL FILTRATION SERVICES

Protecting Evaporative Cooling Units and Preventing Downtime in Data Centers

Customer Case Study



PROFILE

An American company specializing in building data centers and a leader in global colocation data center market share contacted Total Filtration Services (TFS) to address collapsing filters in their evaporative cooling units at one of their California locations. Read on to learn how the TFS solution resolved the issue, improved energy efficiency, and reduced labor and waste disposal costs.

CHALLENGE

Data centers operate 24/7 with zero tolerance for service interruption and depend heavily on an energy-efficient cooling system to prevent servers from overheating. The building involved in this case study uses heat exchangers that are cooled by evaporative cooling systems. The evaporative cooling units use four-inch MERV 8 pleats to filter the air before the air passes the humidification media. The pleated filters were becoming blinded-off by significant amounts of large particulate loading onto the media. This was causing excessive pressure drop, leading to the eventual filter collapse.

Consequently, the data center was using more energy to regulate the temperature. To compensate for the airflow restriction caused by particulate build-up, the operators were increasing the fan speed of the evaporative cooling units. To make matters worse, the pleated filters were not rated to withstand the additional static pressure, increasing the risk of filter collapse. If filter collapse occurs in one of the units, it needs to be shut down – causing the other units to work harder to maintain the temperature needed to keep the servers cool.

This is particularly concerning should the unit go down during the day while outside temperatures are running high. Service at a data center cannot be interrupted, regardless of surrounding conditions.

THE TFS SOLUTION

The data center's site engineer met with a TFS account manager who recommended mounting PreVent® air intake filter screens to the outside of the cooling units to prevent the larger particulates from reaching the pleated filters and system coils.

PreVent® air intake filter screens are custom-made in the USA by Permatron, a long-time trusted partner to TFS. These screens are designed to fit any outdoor air intake, and can be simply brushed or hosed clean, with zero downtime.

The customer purchased enough PreVent® screens for two of the evaporative cooling units to run a short trial and ensure they would provide the protection needed to prevent pleats from collapsing without excessive energy consumption.



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Example of a cooling unit before and after installing a Permatron PreVent® intake filter screen

RESULTS

The PreVent® air intake filter screens successfully protected both cooling units and prevented the pleated air filters from collapsing. Upon confirming their effectiveness, the customer moved forward with purchasing enough PreVent® screens to protect all 14 of the evaporative cooling units for the facility.

Since outfitting each unit with the protective screens, the site engineer for this facility has reported the following improvements:

- The cooling system is more durable and reliable because it is operating efficiently without unscheduled disturbances.
- Increased focus on preventative maintenance as opposed to unscheduled maintenance. PreVent® screens can be efficiently cleaned and re-applied in half the time as compared to replacing an unscheduled collapsed filter, which requires shutting down the unit, getting the replacement filters from another building, changing them out, and discarding the collapsed filters.
- Increased energy efficiency due to the cooling system not having to work harder to account for down units. Additionally, the airflow restriction of the PreVent® is negligible, which is a common concern for any customer considering equipment protection.

- Product costs have been reduced. Because the pleated filters are meeting their life expectancy, replacement pleats are ordered only to maintain the quarterly change-out schedule. This eliminates the need to purchase additional stock for emergencies.
- Disposal costs have been reduced as a result of producing less waste from excessive replacement of collapsed filters. This reduction has also reduced their carbon footprint.
- The cooling system is more robust and reliable.
- Labor is being used more efficiently.

As a global leader, this customer is always building new data centers to address the needs of its customer base. Therefore, the PreVent® air intake filter screen solution supplied by Total Filtration Services can be applied to each facility and ensure reliability across each location.

[Learn more about the PreVent® system and discuss this simple yet effective solution with a TFS filter expert.](#)