

# 111 South Wacker Drive Building in Chicago, a LEED Building, Uses Tekleen Self-Cleaning Water Filtration System

The 111 South Wacker Drive building, a 52 story, 1.1 million square foot class A office building in Chicago, is a privately owned building which has earned LEED Gold certification for both New Construction and Existing Buildings, and as of 2015 is Platinum certified. Five categories of green operations contribute to earning LEED certification: water use reduction; sustainable site selection; responsible materials selection and waste management; enhanced indoor environmental quality; and energy efficient operations.

## The Tekleen System

Installed on the top-most floor, the Tekleen system filters the water used in the building condensing water system. It primarily filters the tenant condensing water loop which feeds the building's condensing water to the tenants' supplemental air-conditioning systems, such as for computer server room cooling.

The filter system captures and reuses cleaned flush water via the dewatering system, reducing the overall release of water and minimizing the use of system cleaning chemicals. Additionally it saves energy used to run the filtering mechanisms.

The Tekleen system also provides reduced maintenance costs by minimizing man hours required for cleaning, since it is automatically self-cleaning and very efficient.

The Tekleen system at the 111 South Wacker Drive building consists of a low pressure automatic filter with a backwash controller. The system operates continuously. Water pressure is maintained constantly. When the system detects too much pressure through the filter, it initiates the automatic cleaning process to remove filtered debris and solids, thereby reducing the pressure and restoring a lower work load to reduce energy usage.

The 111 South Wacker Drive building is equipped with a building automation system that can detect changes in the drive speed needed to maintain the proper flow through the tenant system, which has reported an approximate 10% drop in the speed needed to maintain the flow which does equate to energy savings.

## De-watering System

When the Tekleen system automatically cleans its filters, the solid debris is captured in a container called a "filter bag." Then from there, the water used in the cleaning process is returned to the condensing water system. The filter bag is emptied and cleaned every 1 to 3 weeks, and can be reused for subsequent cycles.

## The Old System and Its Problems

The original water filtering system at the 111 South Wacker Drive building had 2 duplex strainers. It required daily cleaning, from 2 to 3 times a day. Each cleaning cycle took 1 to 1-1/2 hours to complete. Manual cleaning was initiated when the old system drive reached a higher than normal energy usage because of the operating resistance caused by accumulated debris in the smaller strainers.

The Engineering Dept. of JLL, the management company for the 111 South Wacker Drive building, were asked to find a solution to the manpower used to perform this task by the building owner representatives. The Tekleen system was chosen to solve this problem. It could use a larger filter with a smaller filter mesh to remove more debris, and because it is self-cleaning, it would save labor and operate more efficiently, saving energy and equipment throughout the system.

## Redundant Alarm

In addition to the Tekleen system alarm, the engineers at the 111 South Wacker Drive building have installed a redundant alarm to notify them through the BAS in the event of a malfunction or a leak. Also with the use of automated controls it has the ability to temporarily stop the cleaning process to protect the building and the tenants.



*Information and photos were kindly provided by Mr. Kevin Injeski, Assistant Chief Engineer, JLL Jones Lang LaSalle Americas.*

*The Tekleen installation was supported by the following:*

- Anchor Mechanical – Pipe Fitters*
- Prime Electric – Electricians*
- Johnson Controls BAS/Controls contractor*

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*Tekleen industrial self-cleaning water filters are suitable for a wide range of applications: HVAC, petrochemical, pulp & paper, drinking water, golf & turf, sugar processing, metal processing, waste water, sea water filtration, greenhouse & nursery, plastics manufacturing, food industry, power generation, car wash water reuse and recycling, and fruit & vegetable irrigation.*

111 South Wacker Drive Building in Chicago



*“Green” roof of the 111 South Wacker Drive building, showing planted sedum in foreground, and the building air conditioning system.*



*Inside the top floor, prior to installing the Tekleen system.*



*The Tekleen system installation when completed.*

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