

Jellyfish Filter LEEDs the way to Treatment within the Building Envelope

Project: Salt Skyscraper Project – 33 Story Stories/194 Condos in building

Location: Vancouver, BC

Owner: Concert Properties

Engineer: Steven Chu P. Eng

Contractor: National Hydronics

Product: Jellyfish® Filter

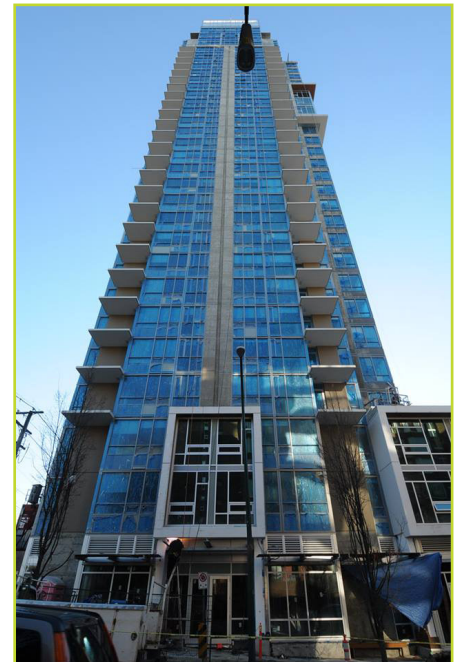


The Salt high-rise project is a thirty-one story mixed-use residential tower located in downtown Vancouver, BC. Salt is comprised of 197 units with approximately 3,000 sq. ft. of retail space and ground floor amenity areas, and 32 floors of residential units. The residential space consists of 4 studio apartments, 129 single bedrooms, 61 double bedrooms for approximately 255 occupants.

There were two challenges with designing the stormwater management system for this project. First, the project was targeting LEED Gold certification. LEED points can be earned by capturing and treating runoff from the green roof, balcony's and parking areas and treating it to remove 80% of the Total Suspended Solids (TSS). Second, the owner wanted to minimize land space dedicated to stormwater management, as this would reduce the usable land space and reduce yearly revenue.

To meet the water quality goals and obtain a LEED credit the engineers choose a Jellyfish Filter. The Jellyfish Filter is a stormwater quality treatment technology featuring membrane filtration in a compact stand-alone system. The compact design and high surface area membrane cartridges removes 89% of TSS and removes a high percentage of particulate-bound pollutants including phosphorus, metals and hydrocarbons.

The original plan was to locate the Jellyfish within the Salt's building envelop in the lower levels of the parking structure (P6) on grade. The city rejected the location, as the city Plumbing Department would not allow mechanically pumping of stormwater above grade into the city's stormwater infrastructure. As a result, the Jellyfish was relocated to parking level P1, such that the stormwater can discharge into the city storm main by gravity.



Jellyfish[®] Filter

CASE STUDY

The Jellyfish is typically produced with precast concrete, and buried below grade. Installing it indoors above grade created a number of unique challenges:

1. It could not occupy any floor area
2. Access was needed at the top of the system for inspection and maintenance
3. The system is typically made of concrete (heavy)
4. The system needed to use fire rated materials

After much research, discussion and design iteration among the project team and Imbrium's engineering staff, the team designed a suspended Jellyfish Filter constructed from fiberglass rather than the traditional concrete, reducing the weight of the system by over 15,000 lbs. Reducing the weight eliminated the need for expensive structural changes to support a concrete system. Suspending the Jellyfish Filter unit from a platform in free headspace in the parking lot within the building envelop also resulted in zero loss of parking space, maximizing the real-estate value. This unique solution allowed the team to satisfy all the design requirements, achieve a high level of water quality treatment, and contribute toward the buildings LEED certification.

Not only did the Jellyfish Filter meet the physical site requirements, it will also deliver water quality, as the installed fiberglass Jellyfish is designed to treat up to 12.6 l/s of stormwater runoff, removing sediment, phosphorus and other pollutants and protecting the sensitive area surrounding the Vancouver area and Harbor that is blocks away.

