



TET (TYPHOON EVAPORATION TOWER)

The Typhoon Evaporation Tower (TET) is a self-contained and enclosed, year-round evaporation chamber designed to occupy a small 30' x 30' footprint. The TET can be a fiberglass cylinder or square column with between 5,500 and 7,500 cubic feet of interior volume. With its specially designed wind diverter stack cap, it stands 26-30 feet high. The TET consists of a single hydraulically-driven Typhoon Evaporation Head operating within a chamber where the air is heated to temperatures between 140° F and 180° F. By heating the air instead of the liquid, NWCI's TET solution requires much less thermal energy keeping customers' operating costs lower. Heat can be supplied using clean natural gases such as propane or from a heat exchanger extracting the heat from a landfill gas flare.

Leachate or liquid waste water is fed to the head from a feedtank or directly from a retention pond. The heating source is used to heat the air within the chamber but can also be to pre-heat the liquid which increases overall system efficiency. After cycling through the TET, the residual 20%-30% of unevaporated liquid – after concentrated by reduction of water – is recirculated back to the source tank or pond where it is reintroduced to the original concentration of waste liquid. Alternatively, the system can also be designed isolate the individual stream to a separate intermediate tank.

The TET evaporation solution includes the tower, motors, pumps, filters, flow valves and bypass valves utilizing industry-proven field reliability and accuracy. NWCI handles site preparation or can work in conjunction with the customer. The offering also includes controls and remote monitoring capabilities as well as software that adjusts flowrates and RPM's of the evaporation heads. Though NWCI utilizes only industry-proven and reliable equipment, remote monitoring capabilities provide an ability to troubleshoot in real-time and a way to stay out in front of preventative maintenance servicing needs.



What is unique about the Typhoon Series

The TET's heated chamber optimizes relative humidity by increasing temperatures levels enabling maximum evaporation while the optional pre-heating of the waste fluids can further reduce the energy necessary for the phase change process. The enclosed chamber also provides customers with more comfort around the release of volatiles into the environment.

NWCI can provide comprehensive flow modeling of site specific constituents, volatiles and solid concentrations to our customers

The Typhoon Evaporation Tower is specifically designed for maximum efficiency and flexible scalability on mission critical operations. Inside the Tower, NWCI's Typhoon head can take a single gallon of water with the surface area of 0.26 square feet and transform it into millions of droplets increasing the surface exposed to the heated environment by over 10,000 times. The Typhoon head can maximize the surface area by increasing the evaporation basket up to 5,000 rpms.

The TET uses NWCI's proprietary Typhoon Series Evaporation Head, a technology adapted by NWCI from its original design for evaporating drilling muds and other viscous materials. With its single-head, the TET is a low entry cost, scalable way to begin evaporating your leachate or other liquid waste stream without significant capital investment or even taking advantage of leasing structures.

The TET is uniquely positioned to do more than just be a stand alone evaporator. It assists, not necessarily replaces, other technologies such as ultra filtration (UF) and reverse osmosis (RO) equipment. By positioning the TET evaporation and its natural pre filtration process ahead of these technologies, allows the user to reduce volumes before the more expensive UF or RO systems thereby reducing the potential sizing/costs of those systems needed. Alternatively, evaporation placed at the back end of the UF or RO process can help further increase concentrations allowing the user to cost-effectively solidify and stabilize the remaining concentrations before being removed to a landfill.

The Typhoon Environmental Safety Advantage

The TET's tower height assures sufficient separation and retention of dissolved solids within the Tower once they have come out of solution, allowing the warm water vapor that is lighter than air to rise and escape through the top of the tower. Volatization of VOCs during the phase change process also occurs, making sure that only vapor rises out of the Tower along with volatized gases. All gases and vapor are dispersed 25 ft into the air.

NWCI's Typhoon head and proprietary software allows control over vapor saturation within the chamber by changing the droplet size. Our software monitors humidity, temperature, the wind speed and wind direction for a final determination of the droplet size being created, adjusting the RPM of the Typhoon head accordingly.

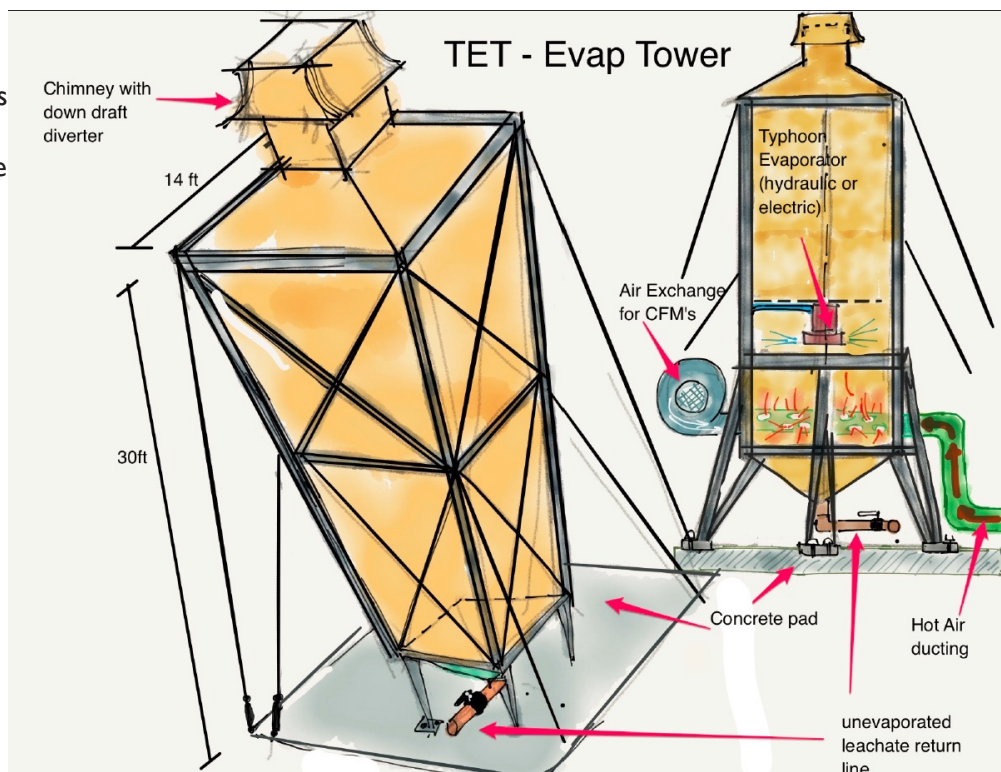


Advantages of using the Typhoon Evaporation Tower

Clog Free Design – NWCI's proprietary Typhoon basket technology is designed to handle viscous materials without clogging, greatly reducing the significant maintenance required with other systems.

Extreme Durability – In order to evaporate large volumes of liquid, NWCI's Typhoon systems are designed to run continuously for thousands of hours. NWCI's sealed electric and hydraulic motors run for several years without needing rebuilding. Monitoring capabilities also provide the ability to foresee maintenance issues

Scalability– The TET evaporation tower concept has been developed for maximum modularity and scalability. Evaporation targets of 3,500-6,500 gallons per day are typical so multiple TET's can be installed in parallel to increase the daily evaporation volumes.



Modular Systems Simplifies Installation & Site Preparation – The modular concept helps provide for simplified installation and site preparation. Site preparation includes a compacted stone surface or concrete pad on which the TET is placed. Depending on final configuration of the evaporation system, supply/feed tank & intermediate residual/recirculation tank would be placed adjacent to the TET as well as a small control structure with control panels, inbound & outbound pumps, heat & air exchangers, and the electric over hydraulic drive unit for the hydraulically driven Typhoon head

Typhoon Basket Specifications

Motors	7.5 HPTENV (Totally Enclosed Non-Ventilated) Motors driving Hydraulic Pump
Pumps	Feed Pump: 1 HP, 90 gpm Centrifugal Pump to feed Typhoon Evaporation Head Return Pump: 1 HP 90 gpm Centrifugal Pump to return residual stream back to Tank/Pond
Filters	In-Line Single or Dual Stainless Steel Filters (easy to maintain & exchangeable filter cartridges)
Flow/Control Valves	V-port or Needle Valve for Typhoon Head
Flow Rate	Maximum flow rate 4.5 – 7.5 gallons per minute (flow rates are dependant upon basket diameter and screen opening size)
Rotation Speed	Rheostat-Style Control Adjustable Flow Valve on Hydraulic Drive 900 RPM: (150-300 microns) 3,450 RPM: Variable Freq. Drive (likely maximum): 4500 – 5000 rpm (20 micron droplet)
Droplet Size	50-300 microns