TowerClean Systems
Packaged Separator Systems for Cooling Towers and Remote Sumps
Designed to keep cooling towers free of suspended solids

Eliminate Basin Cleaning!

Energy Efficient, Environmentally Friendly Designs

- Save energy, water and money
- Reduce biofouling and the risk of Legionnaires Disease
- Eliminate manual basin cleaning
- Minimize maintenance & downtime
- Virtually eliminate underdeposit corrosion
- Protect the environment and natural resources
- Optimize the effectiveness of water treatment programs
- Maximize equipment life
- Increase thermal performance of your heat exchanger or chiller

TCI Series
featuring non-accessible separators

TCX Series
featuring accessible separators

| Flow Range: 30-1670 U.S. gpm* (7-379 m³/hr) | Standard Pressure Rating: 150 psi on TCX/TCI (10.34 bar) | Max. Fluid Operating Temp: 140°F (60°C) |

*Contact LAKOS for higher flow rate options

SOLIDS METER

- 5µm
- 25µm
- 44µm
- 74+µm

Zero Water Loss
Options Available

WATER USAGE

- High
- Med
- Low

Zero Maintenance

LAKOS FILTRATION SOLUTIONS
Typical Installations

Tower Basin Cleaning with TowerClean System and HydroBoosters

Filtered water to chillers/heat exchangers

Contaminants are directed to TowerClean system

Filtered water flows to LAKOS HydroBoosters

LAKOS HydroBoosters
Direct Solids To TowerClean System

LAKOS TowerClean System
Removes And Collects The Solids

HydroBoosters

Directed turbulence maximizes cleaning efficiency in the tower basin/remote sump. LAKOS HydroBoosters provide that turbulence with patented vortexing action as shown. Swivel clips are available as shown in the picture below. Many cooling tower manufacturers offer factory-installed basin sweeping piping. Please consult LAKOS for proper equipment selection.

Model Selection

Since active and directed circulation of basin/sump liquids is required for effective solids removal, model selection for the TowerClean system is based upon the size of the basin or remote sump. This is best determined with these calculations:

For Packaged Cooling Towers

Flow Rate = \( \frac{\text{Length}}{\text{of Basin (feet)}} \times \frac{\text{Width}}{\text{of Basin (feet)}} \times 1 \)

For Remote Sumps With Water Depth Greater Than 3 ft**

Flow Rate = \( \frac{\text{Length}}{\text{of Basin (feet)}} \times \frac{\text{Width}}{\text{of Basin (feet)}} \times 1.5 \)

After determining the required Flow Rate, refer to the Max Basin Size column in the Performance section on the next page. Select the model that has an equal or next larger Flow Rate. For Flow Rates larger than those shown, two or more systems are needed or a custom system must be configured. Please consult the factory.

**Please confirm system selection with factory.

HydroBoosters

Connection     Extension Size Input Flow Effect
Model   Size (inches)  (minimum)   and Output
HB-10-K  3/4" male NPT  3/4"  10 US gpm and 60 US gpm (2 m³/hr and 12 m³/hr)
HB-18-K  3/4" male NPT  1"  18 US gpm and 108 US gpm (4 m³/hr and 24 m³/hr)
HB-35-K  1" male NPT  1 1/4"  35 US gpm and 210 US gpm (8 m³/hr and 48 m³/hr)
*TSN-0025-B  1/4" male NPT  ---  4.2 US gpm (1 m³/hr)

**These flow rates are based on an input pressure of 20 psi (1.4 bar) Minimum water level above centerline of HydroBooster should be 2 inches

* This is a flat-fan spray nozzle (brass) for use in applications with a shallow deck in the basin. May be combined with HydroBoosters

Video of actual operation is available

1 US gpm enters
HydroBooster

1 GPM PER FT²

HydroBooster with swivel clips
### General Specifications

#### Configurations

<table>
<thead>
<tr>
<th>TCI or TCX Model</th>
<th>Separator Model</th>
<th>Flow US gpm</th>
<th>Flow m³/hr</th>
<th>Inlet (flanged)</th>
<th>Outlet (grooved)</th>
<th>Inlet Piping To Use</th>
<th>TCI / Weight Empty (lbs)</th>
<th>TCI / Weight Empty (kg)</th>
<th>Pump HP</th>
<th>Max Basin (sq ft)</th>
<th>Full Load Amperage</th>
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</table>

*LAKOS recommended inlet pipe size  All TowerClean systems are rated for 150 psi (10.3 bar) maximum pressure

#### Dimensions

<table>
<thead>
<tr>
<th>TCI or TCX Model</th>
<th>Dim A inches</th>
<th>Dim B inches</th>
<th>Dim E - TCI inches</th>
<th>Dim E - TCX inches</th>
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<td>67 3/16</td>
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More detailed CAD drawings and CSI specifications are available at www.lakos.com

### LAKOS Separators: How It Works

1. Fluid enters through INLET
2. Internal Swirlflex tangential slots accelerate liquid flow and solids
3. Solids heavier than water are moved to the outer wall of the Separation Barrel via centrifugal action
4. Solids are separated from the main water stream when they hit the gap between the Separation Barrel and the Vortex Deflector Plate and are spun out and into the Collection Chamber.
5. Free of solids, remaining fluid spirals up by force of the Vortex up to the Outlet
6. Patented Internal Vortube improves removal efficiency of smaller particles

### System Components

- LAKOS Separator (different units for different configurations, see “Configurations” chart above)
- Centrifugal Pump w/silicon carbide/silicon seals, rated for 100 ft. TDH (nominal)
- Basket Strainer
- LAKOS Solids Recovery Vessel (SRV) with Indicator Package (SRI)
- Inlet/Outlet Pressure Gauges
- Fully Assembled On A Skid
- All Interconnecting Piping and Valves
- UL Listed/NEMA 4X Motor Starter and Controls

### Optional Equipment:

- Inlet/Outlet Valve Kit (Recommended)
- Dry Electrical Contact (DEC) for Solids Recovery Vessel
- Indicator Package (SRI)
- Motorized Ball Valve or Fail-Safe Valve (in place of Solids Recovery Vessel) for Automated Purging
- PLC (programmable logic controller)
- Premium Efficiency Motor
- International voltages and 50 Hz
- Higher pressures available
FOR HIGHER EFFICIENCY USING LESS ENERGY

High Efficiency Tower Clean Systems

Eliminate Basin Cleaning and Reduce Energy Consumption

eTCX System

- 99% filtration efficiency of solids down to 25 micron (2.6 Specific Gravity) and larger greatly reduces suspended solids in recirculated cooling tower water; significantly improving equipment life and removing food source for biological activity

Advantages of eTCX System

<table>
<thead>
<tr>
<th>AVERAGE SYSTEM NOISE REDUCTION (dB comparison)</th>
<th>eTCX Systems 79.8%</th>
<th>TC Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>79.8% Less Noise</td>
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<th>AVERAGE SYSTEM kW REDUCTION</th>
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<td>eTCX Systems 29.7%</td>
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<tr>
<td>TC Systems</td>
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</table>

29.7% Decrease in system kW consumption

See literature LS-910 for more details

PLUS Options for Solids Removal Down to .35 Micron

FLOW RATES:
- Basin Sweeping: 80 – 410 US gpm (18 – 93 m3/hr)
- Side Stream: 95 – 500 US gpm (22 – 114 m3/hr)
- Maximum Pressure Rating: 150 psi (10.3 bar)
- Maximum Operating Temperature: 140°F (60° C)

LAKOS Separators are manufactured and sold under one or more of the following U.S. Patents: 5,320,747; 5,338,341; 5,368,735; 5,425,876; 5,571,416; 5,578,203; 5,622,545; 5,653,874; 5,894,995; 6,090,276; 6,143,175; 6,167,960; 6,202,543; 7,000,782; 7,032,780 and corresponding foreign patents, other U.S. and foreign patents pending.