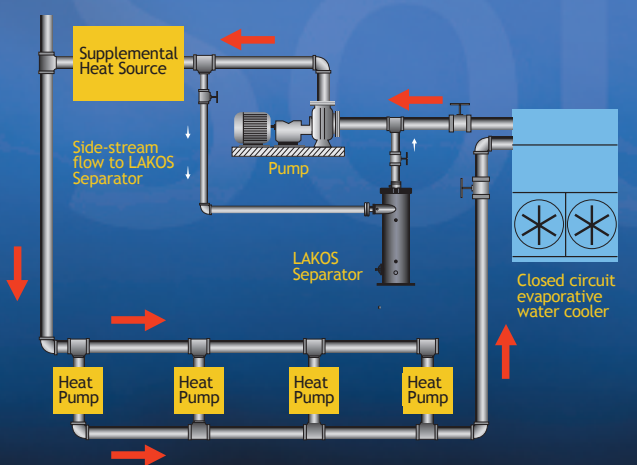
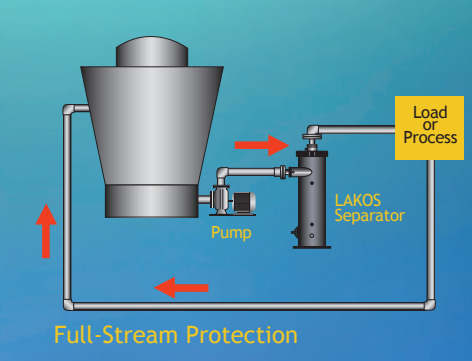


**Heat Exchanger Protection**  
 1) Full-stream installation keeps troublesome solids out of the low velocity heat exchanger to maintain optimum heat transfer. 2) Side-stream on the closed loop controls precipitated scale.

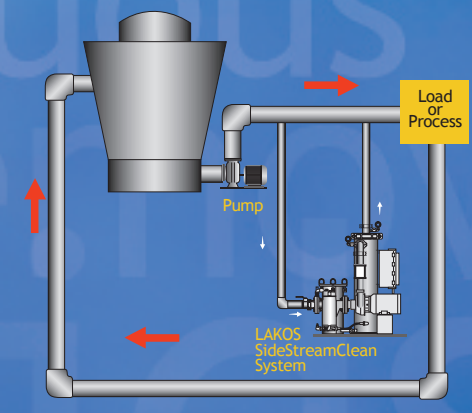


**Heat Pump Protection**  
 Side-stream on this closed loop system protects against scale and solids fouling.



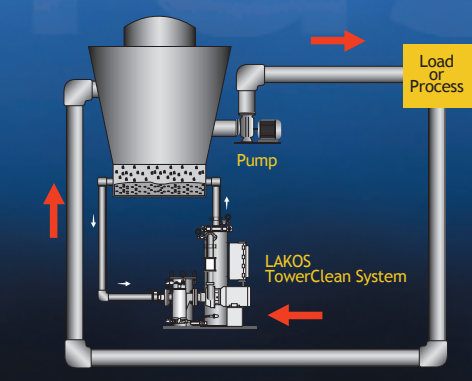
Full-Stream Protection

For a system's entire recirculating flow of cooling water; ensures immediate and continuous removal of virtually all solids.



Side-Stream Protection

Removes solids from a portion of the recirculating flow at a rate greater than the particle influx into the system.



Basin Cleaning Protection

Strategically placed flow HydroBoosters prevent solids accumulation in the basin and attack conditions that breed harmful bacteria.



Liquid Filtration Performance For Cooling Tower Systems

Since the mid-1940's, Claude Laval Jr.'s inventions have been solving problems. A camera that takes pictures deep into water wells. A well casing repair device that restores the effective use of a water well. And the first sand separators, which protected submersible and turbine irrigation pumps. Today, the LAKOS Separator is a proven solution for HVAC comfort cooling systems, process industries, public water systems and more. Complete and engineered solutions for the removal and concentration of troublesome solids, with total liquid recycling. The Laval history features more than 150 U.S. and foreign patents. The complete line of Laval products includes separators, sand filters, self-cleaning screen filters and pump intake screens for a broad range of industries. From a 100,000+ square-foot headquarters in Fresno, California, the Claude Laval Corporation directs its operations with a worldwide network of technically trained distributors. We welcome your application inquiries. Experience, quality, performance and integrity. Satisfying real problems with value-oriented solutions. This is the Laval heritage.

LAKOS Separators and Filtration Systems

A Division of Claude Laval Corporation Not Connected With The DeLaval Separator Company

USA  
 1365 North Clovis Avenue  
 Fresno, California 93727

Toll-Free: (800) 344-7205 (USA, Canada and Mexico)

Telephone: (559) 255-1601  
 Fax: (559) 255-8093  
 Internet: www.lakos.com  
 e-mail: info@lakos.com

Lakos Separators are manufactured and sold under one or more of the following U.S. Patents: 3,289,608; 3,512,651; 3,568,837; 3,701,425; 3,947,364; 3,963,073; 4,027,481; 4,120,795; 4,123,800; 4,140,638; 4,147,630; 4,148,735; 4,305,825; 4,555,333; 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; Des. 327,693; and corresponding foreign patents, including 600 12 329.4-08 (Germany) and EP 1 198 276 B1 (EU); other U.S. and foreign patents pending.



Printed on recycled paper LS-580F (Rev. 3/07)

ASHRAE Guideline 12, regarding legionella:  
 Keep cooling tower systems free from dirt, debris & suspended particles.  
 ASHE 518, regarding safeguards at a hospital facility:  
 Failure to take proactive steps to reduce the risk of exposure to bacteria such as legionella can result in loss of JCAHO accreditation.

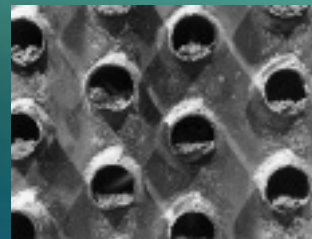


The minimum standard for effective basin cleaning logic!

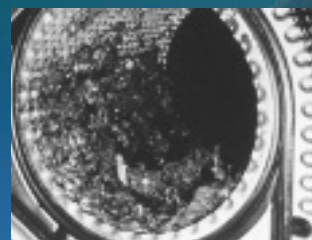




## Fouling!



Airborne sand and grit, drawn in by the fans of a cooling tower. Make-up water with sand and silt. Precipitated solids, caused by heating/cooling, evaporation, acceleration and/or chemical treatment.



Both open and closed loop cooling water systems suffer dramatically from the effects of unwanted solids depositing in tower spray nozzles, within control valves and piping and onto heat transfer surfaces.

Reduced flow patterns. Tower basin accumulation. The costs add up... and an effective solution can be predictably cost-saving:



### Reduce maintenance costs by 60 to 90%

Tower cleaning, heat exchanger punch-outs, labor, downtime.

### Reduce energy costs by 10%

Control fouling of heat transfer devices and increase operating efficiency. A build-up of just .001-inch can add 10% to the energy required for effective cooling.

### Reduce chemical usage by improving efficiency

Fewer solids means less absorption of chemicals and/or less need to counter-act the solids in the water.

### Reduce water consumption by 3 to 5%

Less blowdown. Less sewage/disposal charges. Less make-up water. No need for using large volumes backflushing.

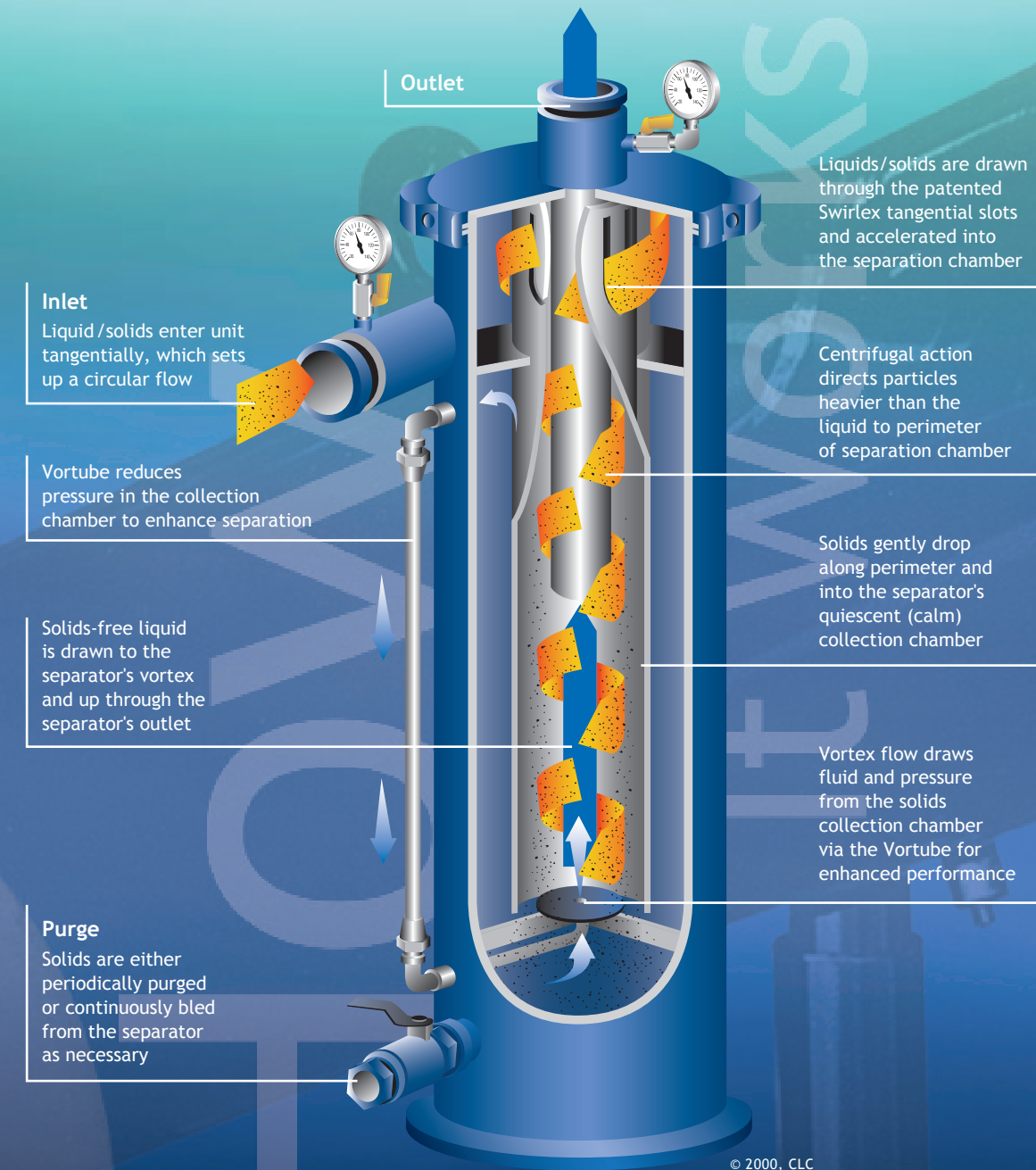
### What is the effective solution?

The removal of settleable, visible solids (+40 microns) at high efficiency with little or no routine maintenance or system interruption. Performance. Reliability. Complete solution capability. Experience.

LAKOS Separators.

**Value. Savings. Payback.**  
Assess the savings potential with LAKOS:

## How It Works



## LAKOS by Comparison

The following criteria determine the suitability of any filter for a given application. Use these to judge LAKOS versus anything else under consideration.

### Particle size removal

LAKOS Separators are proven capable of 5-75 micron performance. The new PLUS Systems offer even finer filtration, down to .35 microns.

### Flow range

LAKOS Separators feature individual units for 3 U.S. gpm (0.7 m<sup>3</sup>/hr) up to 12,750 U.S. gpm (2895 m<sup>3</sup>/hr). Easily manifolded for even higher (or variable) flow rates.

### Pressure loss

LAKOS Separators operate continuously (no fluctuations) at a steady pressure loss of only 3-12 psi (.2 - .8 bar). Compare to screens and barrier filters, which build-up to very high pressure losses.

### Liquid loss and solids handling

LAKOS Separators require no backwashing. Low-flow periodic purging or a controlled bleed technique can achieve zero liquid loss. Selected solids collection options ensure minimum waste and easy disposal/recovery.

### Replacement parts

LAKOS Separators have no moving parts to wear out and no filter elements or sand media to clean or replace.

### Maintenance requirements

LAKOS Separators may be purged of separated solids without system interruption. Easily automated for no maintenance routine. No filter cleaning. No duplicate equipment needs.

### Space requirements

LAKOS Separators are compact. Larger models may be specified at low or vertical profile and/or with alternate inlet/outlet configurations to accommodate limited space or piping needs.

### Engineering and tech support

LAKOS Separators can be easily retrofit to most systems. Complete system packaging is available. Customer specifications are welcome. Application and product engineering is staffed for immediate customer needs.



Reduced Maintenance Costs  
**60-90%**

Energy Savings  
**10%**

Assists In The Reduction Of Excess Chemical Usage

Water Consumption Savings  
**3-5%+**

### LAKOS Tower System Sand Filters

Available in stainless steel or FRP (fiberglass-reinforced polyester); wide range of flow rates for full-stream and side-stream applications.

