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SPL BTC SERIES Closed Circuit Cooling Towers



SPL promotes low-carbon economy——Water saving! Power Saving! Cost Saving! Environment friendly!



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Baofeng Refrigeration-SPL company is 100% owned by listed company Lianhetech with national resources and solutions for world wide heat transfer application SPL is dedicated to designing and manufacturing the highest quality products for the evaporative cooling and industrial refrigeration markets around the globe.

Since its founding in 2001, SPL has become an industry leader in the engineering and manufacturing of quality heat transfer products in China.

SPL's combination of financial strength and technical expertise has established the company as a recognized manufacturer of market leading products on a nationwide basis. SPL has also recognized for the superior technology of our environmentally friendly products, innovation in sound reduction and water management.



SPL promotes low-carbon economy——Water saving! Power Saving! Cost Saving! Environment friendly!



Lianhetech's locations are as below, Baofeng Refrigeration has two sites, one is in Shanghai ,and the other is in Jiangkou, Zhenjiang Province.





CLOSED CIRCUIT COOLING TOWER are commonly selected for numerous commercial and industrial process cooling applications.

Here are some examples——

- Water Sources Heat Pumps
- Self-contained Cooling Units
- Chillers
- Free Cooling Applications
- Data Centers
- Hybrid Evaporative/dry Cooling
- Compressor Cooling Special Fluids
- Jacket Cooling/Intercooling/Aftercooling
- Machine Jacket Cooling
- Induction Furnaces
- Consolidating Multiple Loads into a Single Cooling Unit





Advantages of Closed Circuit Cooling

Vs.

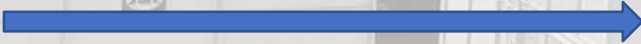
Cooling Tower+Heating Exchanger System



Closer approach to wet bulb and reducing fouling , improving process efficiency

Vs.

Air-cooled Systems



10-20°C lower process temperature, less required spaces, and lower energy consumption

Vs.

Open Cooling Towers



Contaminant free, closed loop cooling significantly reduces fouling, ensuring constant performance over time

Vs.

Once-Through Systems



Reduces environmental impact, saving up to 95% of the cooling water



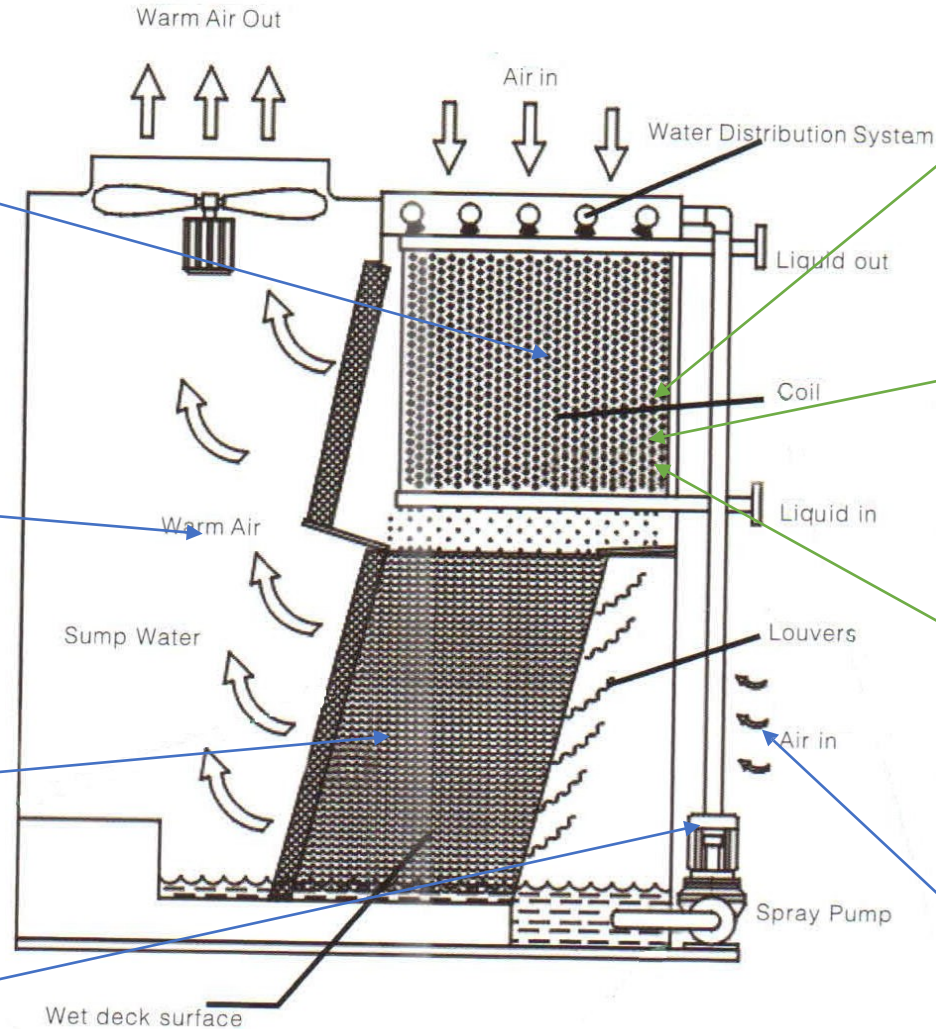
Principle of Operation

1. Working fluid is flowing inside of coils, which are wrapped by spray water on the outside.

2. The heat of working fluid is transferred by the wall of coils, and become the saturated vapor when meet water and air, the heat is exhausted out of tower by the fan.

3. Water is cooled down via PVC filling and collected back to the bottom tank.

4. The water circulating is realized by spray pump installed outside of the tower.



SPL CLOSED COOLING TOWER

The water flows same direction with the fresh air, which minimize scale-producing dry spots that may forming in the bottom of tubes

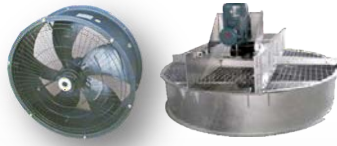
The cooled circulating water increases the temperature difference between water and the warm working fluid, which helps reduce the coils size, weight and reduce the scale forming tendency.

The coils transfer heat both by fresh air and more significantly by pre-cooled circulating water which is sensible heat transfer. The reducing evaporative cooling of coils help scale forming of coils.

The circulating water spray falls from the coil to the PVC fill where it is cooled by second fresh air using both evaporative and sensible heat transfer process.



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Direct Drive Axial Fan

SPL BTC S SERIES UNIQUE DESIGN FEATURES



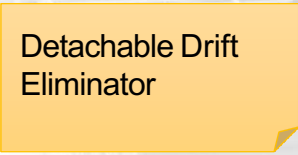
Pressurized Distribution System- Pipe and Nozzles



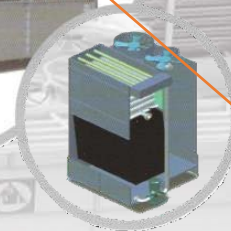
Super Galum Wall Structure



High Quality Condensing coils



Detachable Drift Eliminator



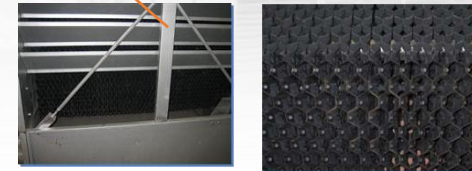
SS304 Reliable Fixing Element



Electronic De-Scaling



Circulating Pump



Metal Air Deflector +PVC FILL



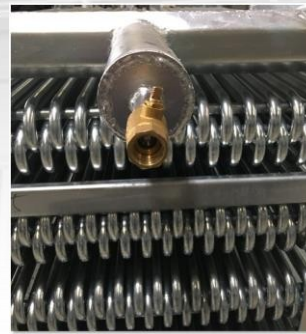
Advanced Technology

SPL's exclusive condensing coils are manufactured at SPL from high quality steel tubing following the most stringent quality control procedures. Each circuit is inspected to assure the highest material quality.

All SPL coils are formed in one continuous piece using a unique automatic coil production line, this process limits welding slag, increases production efficiency and factory lead times.

The coils are hydrostatically tested 3 times during the manufacturing process to 2.5Mpa to ensure they are leak free.

To protect the coil against corrosion, coils are placed in a heavy steel frame and then the entire assembly is dipped in molten zinc (hot-dip galvanized) at a temp of 427°C. The tubes are pitched in the direction of fluid flow to provide good liquid drainage.





Advanced Coil Technology



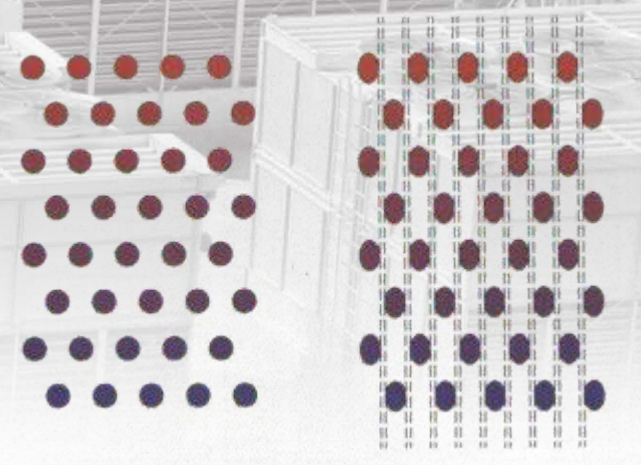
SPL's standard coils offer the most effective performance of heat transfer with the coil technology and fill combination to avoid the dry spot and dirt forming on the coils.

SPL's coils feature an exclusive design which assures maximum cooling capacity. The airflow through the coil is parallel to the fluid flow, providing the most efficient heat transfer process. A special coil design is utilized to reduce the air pressure drop through the unit while maximizing tube surface area and increasing its heat transfer capabilities. The uniquely shaped tubes of the coil are staggered in the direction of airflow to obtain a high film coefficient.

The Uniquely Elliptical Shape Fin Coils For SPL-ST & SPL - NT Lines

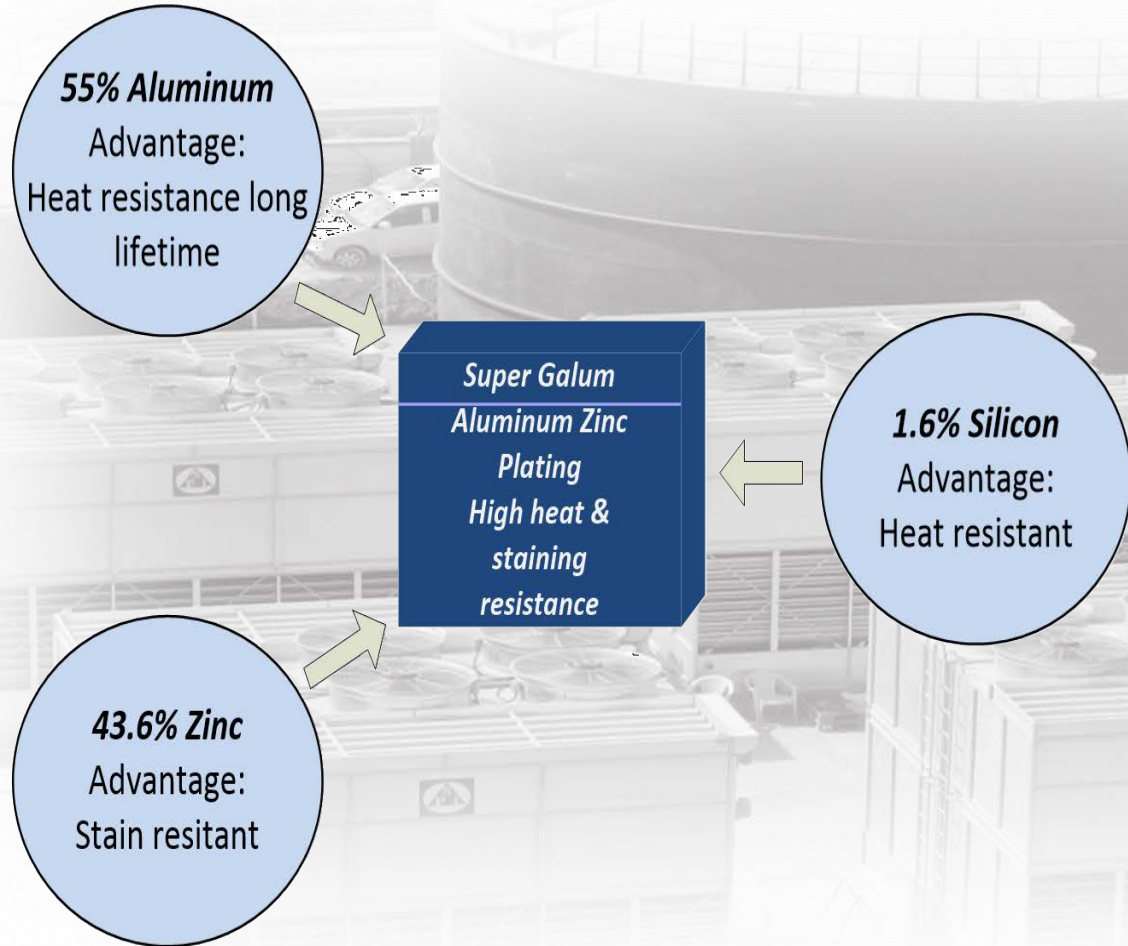
The new latest SPL Condensers utilizes patented elliptical fin coils design which assures even greater operating efficiency. The elliptical tube design allows for closer tube spacing, resulting in greater surface area per plan area than round-tube coil designs.

In addition, the revolutionary elliptical design utilizes elliptical spiral fin coil technology and has lower resistance to airflow than typical finned coil designs. This permits greater water loading, making the new elliptical coil the most efficient coil design available on the market.





Super Galum Wall Structure



Super Galum is the brand name for 55% aluminum-zinc coated steel sheet. Super Galum is highly heat and corrosion resistant, combining the properties of aluminum which renders increased durability, excellent heat resistance, formability, and those of zinc which offers high heat resistance and excellent corrosion protection. Super Galum is three to six times more corrosion resistant than regular zinc coated steel sheet.





Advanced Technology—Descaling Cleaner

The electronic descaling cleaner offers 98% increased effectiveness over of water scale inhibition and over 95% increased sterilization & algae removal over high-frequency electronic technology. Designed especially for closed loop cooling tower and evaporative condensers with low power consumption.

Treatment Performance



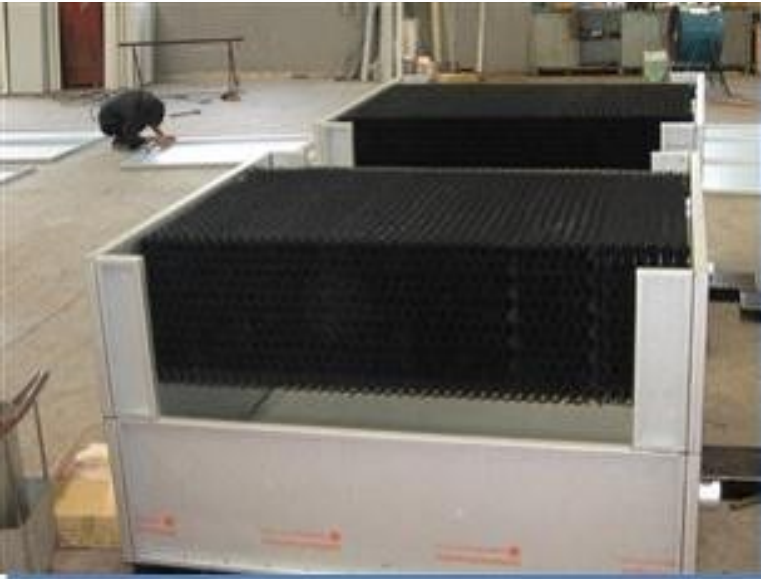


Patented Fill Technology

SPL® fill design used in the S lines evaporative condenser and cooling tower and is specially designed to induce highly turbulent mixing of the air and water for superior heat transfer. Special drainage tips allow high water loadings without excessive pressure drop.

The fill is constructed of inert polyvinyl chloride, (PVC). It will not rot or decay and is formulated to withstand water temperatures of 54.4°C. Due to the unique way the cross-fluted sheets are bonded together in the honeycomb structure of the fill and the bottom support of the fill section, the structural integrity of the fill is greatly enhanced, making the fill usable as a working platform.

The fill selected for the condenser and cooling tower has excellent fire resistant qualities.





Patented Air Inlet Louver

With the SPL two pass louver system, the water droplets are captured on the inward sloping pass, minimizing splash-out problems.

SPL's unique louver design for all SPL'sN lines completely encloses the basin area.

Direct sunlight is blocked from the water inside the condenser and cooling tower, thereby reducing the potential of algae formation.

Water treatment and maintenance costs are substantially reduced. While effectively containing the recirculating water and blocking sunlight, the louver design has a low pressure drop.

The low pressure drop results in lower fan energy consumption, which reduces the operating costs of the cooling tower.

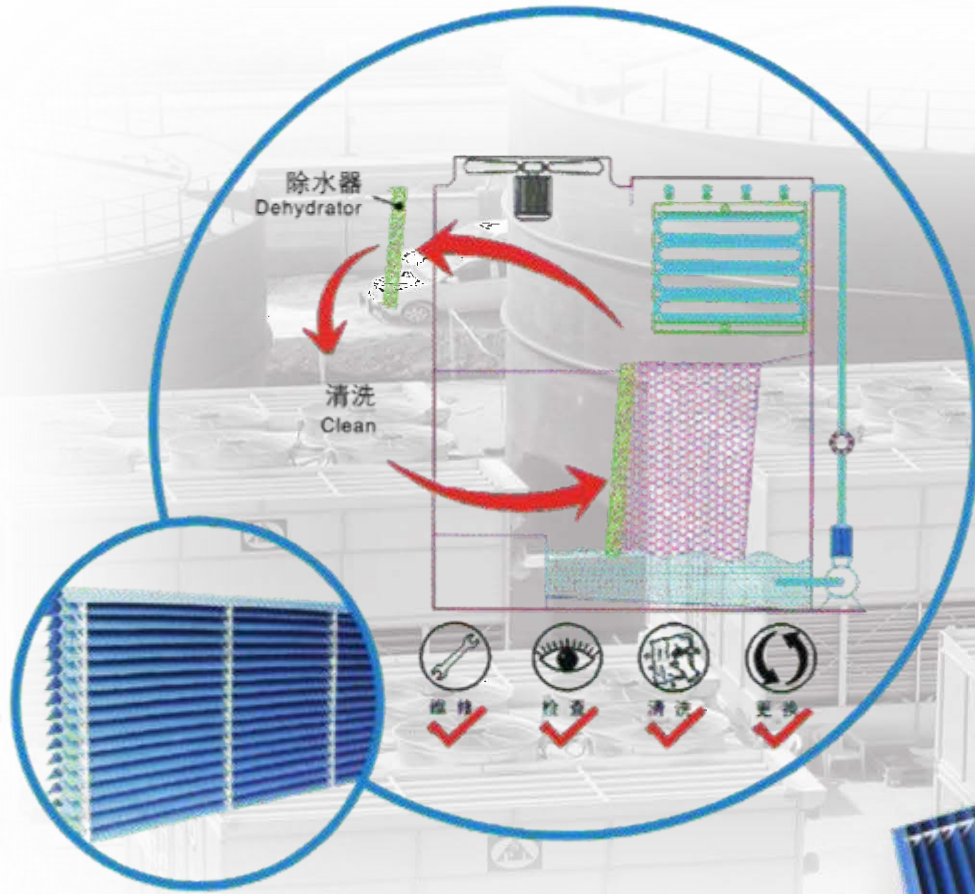




Patented Drift Eliminator

SPL's detachable drift eliminator is made from specially designed non-corroding PVC material. The patented eliminators comply with AS/NZS 3666.1:20116 with a maximum drift loss of 0.001%.

Eliminators are designed for ease of maintenance making them extremely easy to clean.





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Pressurized Water Distribution System

SPL's exclusive **patented** maintenance free spray nozzle remains clog-free while providing even and constant water distribution for reliable, scale-free evaporative cooling under all operating conditions. Furthermore, the nozzles are mounted in the corrosion-free water distribution pipes and have threaded end caps.

Together, these elements combine to provide unequalled coil coverage and scale prevention, which makes them industry's best performing non -corrosive, maintenance-free water distribution system.





Patented Metal Air Deflector

With the SPL adjustable air deflector system, the water droplets are captured on the inward sloping pass, minimizing splash-out problems. SPL's unique design for all SPL's Slines completely encloses the basin area. Adjustable function keeps direct sunlight away from the water inside the condenser and cooling tower, thereby reducing the potential of algae formation. Water treatment and maintenance costs are substantially reduced. While effectively containing the recirculating water and blocking sunlight, the louver design has a low pressure drop. The low pressure drop results in lower fan energy consumption, which reduces the operating costs of the cooling tower.





Direct Drive Axial Fans

SPL direct drive fans offer following advantages over belt driven fans used by most competitors;

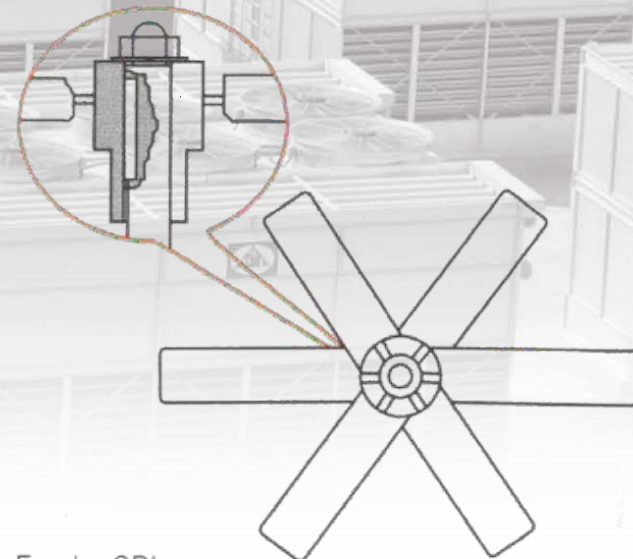
Low failure rate

Easy maintenance

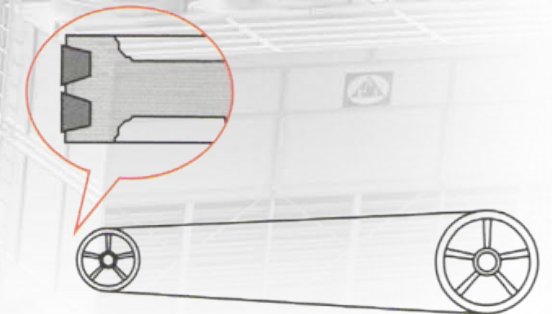
Low noise

Low transmission loss

The axial fan of SPL lines use specific carbon fiber blades forward curved fan, this offers, high air volume, low noise, perfect performance with high efficiency.



Fan by SPL



Fan by others



Low Maintenance

The SPL series of evaporative condensers have several key features that

Sloping basin

The slope of basin bottom to drain pipe makes for convenient cleaning and removal of debris.

Large Access Doors

Large access doors and generous inner chamber makes for convenient examination and repair.

The ball cock and filter of SPL series can be examined and repaired without stopping the operation of the condenser due to the same direction for airflow and water flow. The nozzles and coils also can be examined and repaired during operation.



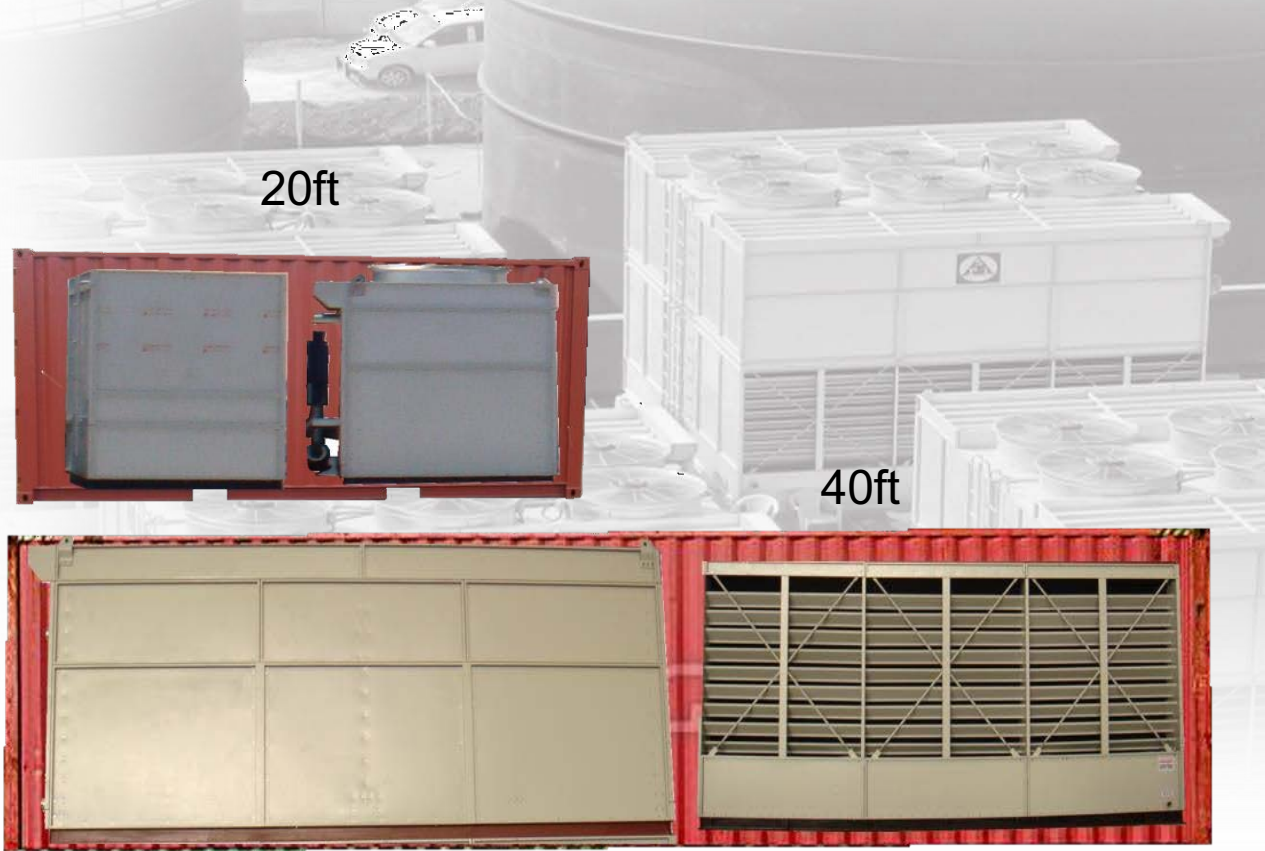


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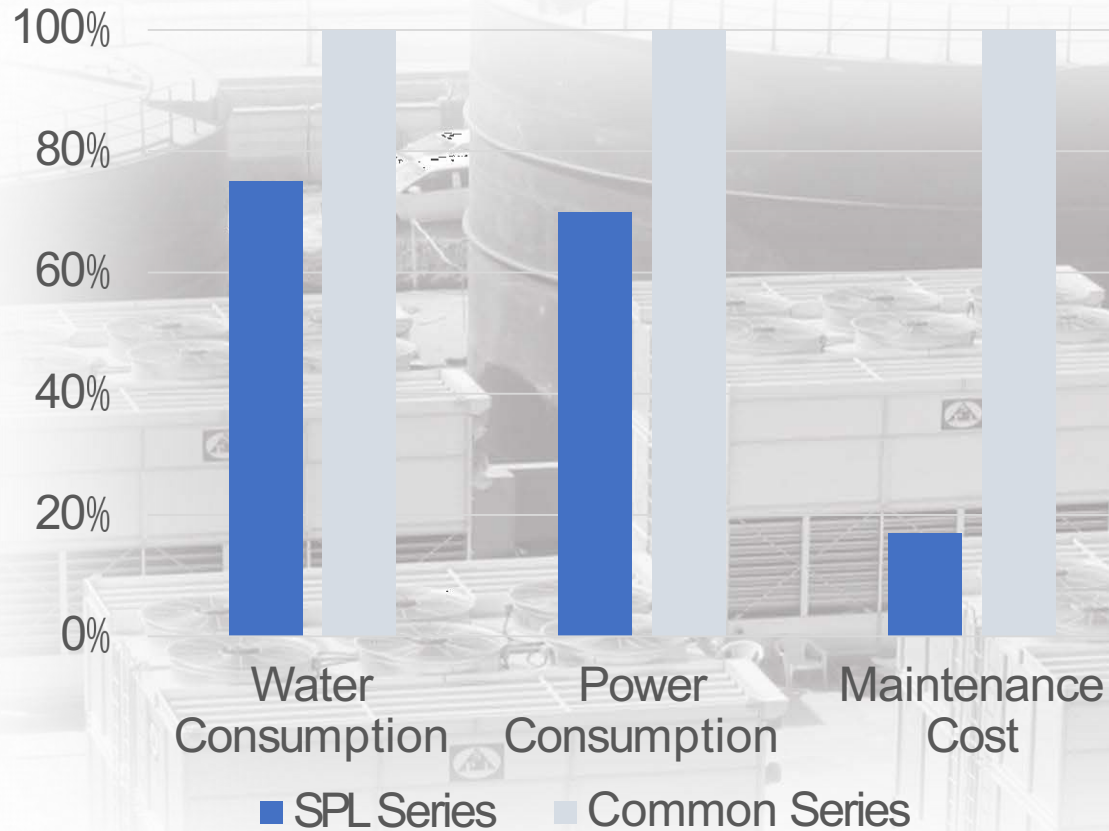
Containerized Design for Low Shipping Cost

The SPL-Series products are designed to be shipped in kit form that fits in 20ft and 40ft containers.





Operation Advantages



SPL has earned a reputation for technological innovation and superior product quality by featuring products that are designed to offer these operating advantages:

- ✓ Improved cooling efficiency and performance
- ✓ Lower Energy Consumption
- ✓ Lower Annual Operating Costs



CLOSED COOLING TOWER SELECTION GUIDE

The BTC Series capacities in the following tables are rated to the following conditions.

Atmospheric Pressure: $P=1.004 * 100000\text{PA}(753\text{mmHG})$

Web Bulb Temperature $T=28\text{ }^{\circ}\text{C}$

Water Inlet Temperature $T1=37\text{ }^{\circ}\text{C}$

Water Outlet Temperature $T2= 32\text{ }^{\circ}\text{C}$

Heat of Rejection Q calculation for closed cooling tower $Q=1.163*m*(T1-T2)$
1.163= Constant

m= water flow rate (m^3/h)

T1= inlet cooling water ($^{\circ}\text{C}$)

T2= outlet cooling water ($^{\circ}\text{C}$)

Please contact SPL for selection and that differ to the standard conditions above.

Example:

m= water flow rate $110\text{ m}^3/\text{h}$

T1= inlet cooling water $37\text{ }^{\circ}\text{C}$

T2= outlet cooling water $32\text{ }^{\circ}\text{C}$

Location Wet Bulb Temperature $28\text{ }^{\circ}\text{C}$

$$Q=1.163*110*(37-32)=639.7\text{kW}$$

Select a BTC-06S-112WS capacity
 $651\text{kW}>639.7\text{kW}$



BTC-WS Cooling Towers



OPTIONS

Casing

SPLBTC cooling towers come with Super Galum coating as standard, however the fooling are available on request.

304 Stainless Steel

316 Stainless Steel

Coils

Hot-dip galvanized coils, 304 SScoils and 316 SScoils are available on request.

Sump Heater

IP rated immersion heater to prevent freezing of the water in the basing during shutdown or standby are available on request.

Access Ladder and Platform

External access ladder and handrail packages are available to provide safe access to the top of the unit for maintenance.



Super Galum Coating



304 SS



316 SS



Hot-dip galvanized



304 SS



316 SS

SUMP HEATER



IP rated immersion heater



**External Access Ladder
and Handrail**



®
Special
Professional
Leading the industry new development



Thank you!

CONTACT US *for more ...*



Parag Jain

Director



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