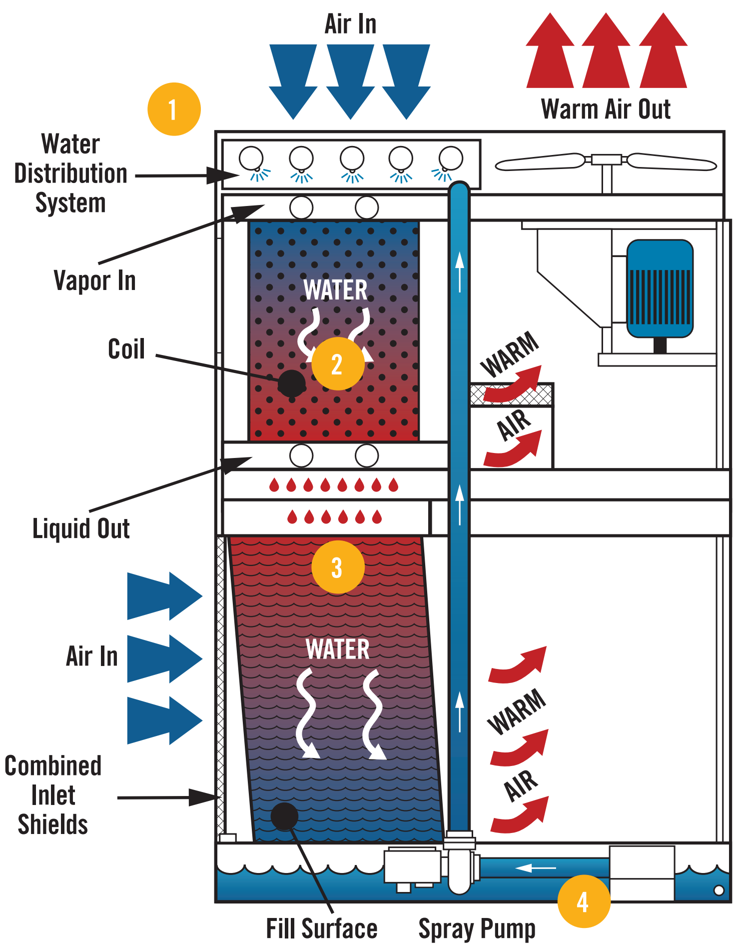
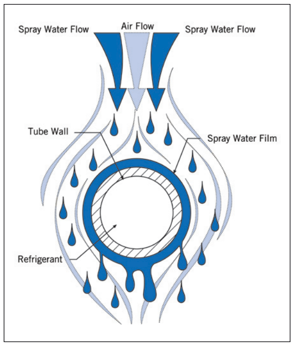
PRODUCT SPOTLIGHT:
Combined Flow Technology

Reduces scale, resulting in sustained thermal performance and maximum coil life.

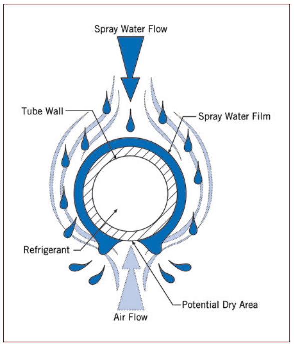
CXVB and CXV-T Evaporative Condensers use Combined Flow Technology which reduces the tendency to accumulate scale on the condensing coil surface. By reducing scale tendency, the CXV Series is able to sustain peak heat transfer capability and the benefit of maximizing coil life. CXV units are specifically designed to save customers time, money, and energy in the installation, operation, and maintenance of evaporative condensers.



CXVB Evaporative Condenser



Combined Flow Technology



Conventional Coil Technology

1. Water is sprayed in parallel with the fresh ambient air flowing over the outside of the condensing coil. Parallel air and water paths minimize scale-producing dry spots that may be found on the bottom of the tubes in other, conventional condensers.
2. The condensing coil rejects heat through both evaporative cooling using the fresh air stream and, more significantly, through sensible cooling of the pre-cooled recirculating spray water. Reducing this evaporative cooling component from the coil section helps to minimize the propensity to form scale on the coil surface.
3. The recirculating spray water falls from the coil to the fill section where it is cooled by a second fresh air stream using evaporative heat transfer.
4. Water is pumped over the condensing coil at a rate greater than 10 USGPM/ft^2 of coil plan area to ensure continuous wetting of the primary heat transfer surface, which enhances heat transfer efficiency and minimizes scale formation.

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Effect of Scale on Evaporative Condenser Performance

Even minimal amounts of scale on the condensing coil surface will affect the performance of evaporative condensers. Figure 1 illustrates the impact of scale build-up on a condenser performance. With only 1/32" thick scale, the evaporative condenser performance is robbed of 27% of its heat transfer capability. As scale thickness increases, capacity decreases significantly.

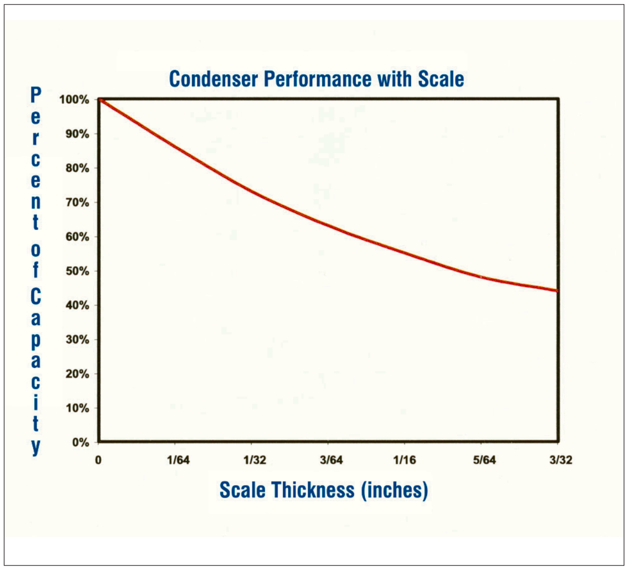

Figure 1

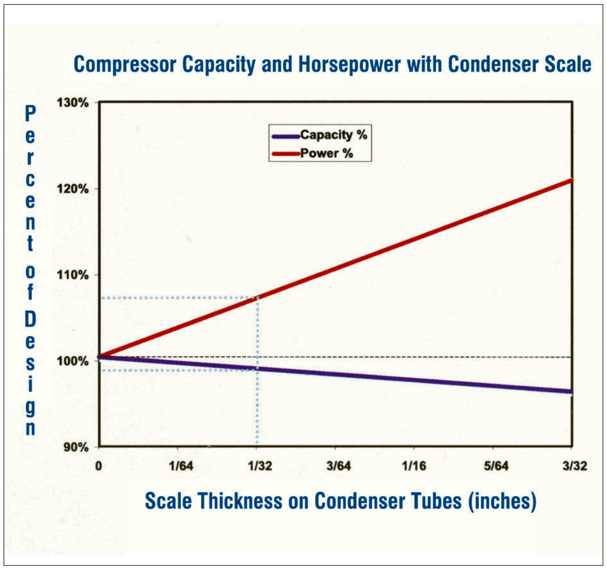

Figure 2

The Cost of Scale

Although the formation of scale is not always noticed by the system operator, an evaporative condenser with a scaled-up coil forces other system components to work harder to make up for its shortcomings. In a refrigeration system, the burden is placed on the compressor. With scale build-up on the condenser coil, the compressors will work against higher head pressures, and therefore consume greater energy and reduce output. This will increase system-operating costs year-round, although it may go unnoticed until the system operates on the hottest days.

With just 1/32" thick scale, the compressor power will increase 7% and the compressor tonnage will decrease 1%. This reduces maximum plant throughput and associated revenue by a similar percentage. Figure 2 illustrates further penalties as scale increases.

In addition to lost throughput, the energy costs for 1/32" of scale on the coil are significant. For example, consider a 1,000 TR freezer application with 0° F suction and 95° F condensing. **The additional energy costs** associated with 1/32" thick scale amount to 25% of the cost of a new condenser each and every year.**

*** Based on 50% annual usage, $10/kW per month demand charge, and $0.05/kWh electric rate.*

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