

Filter installation primer for cooling towers

A complete guide to the options available for open or closed loop systems.

By Mario C. Uy

Water treatment dealers looking to perform cooling tower work should have a strong knowledge of the different types of filter installation, as well as their respective advantages and disadvantages.

All installations covered here are suitable for open or closed loops and are applicable to all types of filters (cartridge, sand and backwashable).

In-line installation

With this type of installation, the filter

is installed in-line of the water pipe. This type of installation filters water in a single pass, and uses the system's recirculation pump.

The installation has some limitations, as follows:

- It requires a larger filter to handle the full flow of the system;
- As the filter becomes dirty, it reduces the flow throughout the entire loop, increasing head pressure and eventually shutting the system down, unless the filter is cleaned or changed

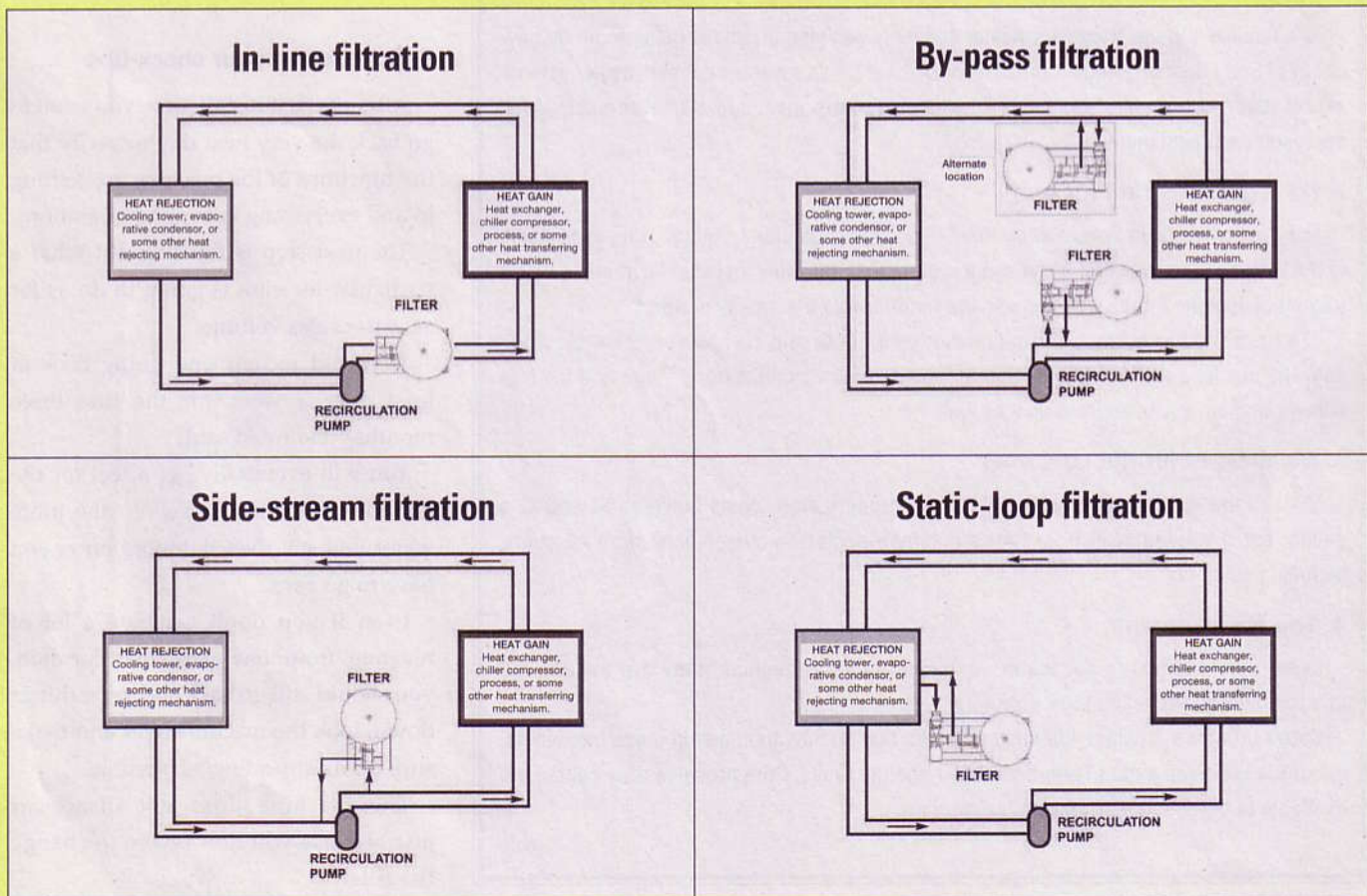
immediately.

To prevent this interruption, it will require some auto by-pass, or duplex operation.

By-pass installation

In this situation, the filter draws water from upstream and returns it downstream to the "same" water line, either on the discharge or suction side of the recirculation pump.

This type of installation is not recommended if using the system's recircula-



tion pump, unless some modifications are done on the water line.

The filter draws and discharges water back to the same water line under the same pressure. The water flow through the filter will be restricted immediately at the slightest pressure drop.

To overcome the above restriction, install a separate recirculation pump to force the water through the filter bed, or install a modulating throttling valve on the water line to force the by-pass of the water through the filter.

Side-stream installation

In this installation scenario, water flow to the filter is taken from the discharge side of the recirculation pump (higher pressure side) and returned to the suction side of that pump (lower pressure side). Water can also be returned to a tower basin or any hot/cold well.

Additional installation considerations

- Is the filter vessel rated for the line pressure at the point of installation?
- What is the backwash water source: system water, fresh water, others?
- If using the system's recirculation pump, can it handle the additional head loss created by the filter?
- Consider backwash disposal (environmental constraints as well as flow rate).

— M.C.U.

This type of installation can rely on the system's recirculation pump.

However, the size of the filter is limited to a fraction of the flow rate, in order not to reduce the supply adversely.

Static-loop installation

Here, the filter draws water from a static source such as a tower basin (or a hot/cold well) and returns it back to the same tower basin (or the hot/cold well).

This type of installation requires an

independent recirculation pump to drive the water through the filter bed and to accomplish the backwash.

This is not limited by system pressure, flow rate or ΔP across the filter bed.

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