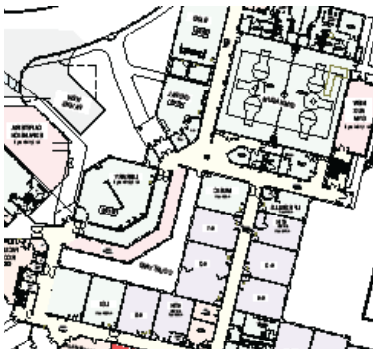
Chillers



A necessary component of your Heating, Ventilation, and Air-Conditioning (HVAC) system, Chillers are machines that produce cold water by removing the heat from the water.

Why is this unit so important to the functioning of your system, and how can you tell when it's starting to fail and needs replacement?

FIRM STATS AT-A-GLANCE

11 PERSONNEL
6 LICENSED ARCHITECTS
3 LEED ACCREDITED PROS
+ CONSULTANT SERVICES

SUSTAINED RECORD OF EXCELLENCE

- AIA: Award of Special Citation, Institutional/Commercial; Fostering Emerging Professionals Recognition; Architectural Design Award for Merit (Eastern chapter)

-Architects & Engineers: Presidential Award of Excellence, Innovative Energy Efficient Design

- Associated Builders & Contractors: Award of Excellence

- Central PA: Forevergreen Award, Suburban Renewal School of the Year

- **Masonry Contractors of Central PA:** Excellence in Masonry Design; Judges Award for Craftsmanship

Building chillers are the largest energy-using component in most institutional and commercial facilities. The "chiller" produces cold water by removing heat from the water. The cold water is called "chilled water".

From there, chilled water is pumped to air handlers and it is used to make cold air which is then distributed to the building and used for air conditioning. The heat that the chiller removes from the water is discharged to the atmosphere outside the building.

TALES OF DEFERRED MAINTENANCE

There are valid reasons why administrators and facilities managers have to put off maintenance. Unfortunately, this strategy usually proves to be more costly in the end (much like putting off car maintenance, or trips to the doctor).

A lot of schools face circumstances where the maintenance team is short staffed, so the chiller becomes fouled and needs cleaning.

If ignored, over time the debris load will become too much of a burden and will completely foul the chiller coils, which then sets off a chain reaction resulting in a second level of failures, and expenses. By addressing the need for the earlier coil cleaning in the beginning, you avoid potential compressor or full-unit replacement, plus installation and down time, at ten times the cost.

This scenario can get worse if your facility has invested in technology that requires a climate controlled environment. Computer systems fail when you don't have the appropriate temperature, shutting down yet another section of your infrastructure. Not to mention, this is where Legionnaires Disease can show up and make your population sick - giving you a PR problem on top of everything else!

HOW TO TELL IF YOUR CHILLER IS WORKING

In many facilities, more than 50 percent of the annual electricity use can be attributed to the chillers. If your chillers are being operated or maintained poorly you will incur higher energy costs, lower system performance/reliability and decreased life cycle of the unit.

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How do you know if its not working properly?
Number One Symptom - Your A/C is not cool enough, or not working at all!

If one or more of your chillers are down there will be uncomfortable conditions in the classrooms and common areas. Many schools have had to dismiss or cancel classes due to excessive heat because their chillers have failed. Even if part of your school is maintaining air conditioning, it will not be operating at full capacity, which is not safe for building occupants.

Even if you are leasing your location you don't want to lose your students and staff for a few days. Make sure your facility knows about any issues right away. Energy bills, and efficiency, are part of your bottom line.

BEST PRACTICES FOR YOUR CHILLER

• ***Stick to the Manufacturer's Recommended Flow Rate of Chilled Water.***
It's tempting to up the flow - assuming it will make things cooler. However in reality, increasing the flow rate will reduce the operating efficiency, and increase the erosion rate of the tubes, leading to early tube failure.

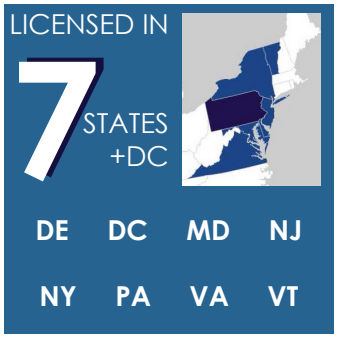
• ***Get with the Plan! Make a Regular Maintenance Schedule.***
Keep a chiller operating log to record and track data. This helps facilities managers identify trends in performance, pinpoint underlying causes of inefficiency, and record maintenance performed on refrigerant leaks, air leaks, tube fouling and other problems. Tracking this information gives you a heads-up on the life cycle left.

• ***Check in with your Cooling Towers.***
Typically located up on the roof, the cooling towers are exposed to the elements and collect dirt, leaves, and other debris that can clog up your air and water passages. This is the place where warm pools of water, open to the atmosphere, create ideal conditions for the dreaded legionella bacteria (think Legionnaires Disease). In order to manage this risk, you have to implement water-treatment programs to make sure you keep the concentration of suspended solids at an acceptable limit, stop potential contamination, and monitor the tower-fan and water-level controls.

FINAL THOUGHTS ON CHILLING OUT

Just like your clothing size, your chiller size may need to adjust over time. But don't install an oversized one assuming bigger is better, or one that doesn't provide correct coverage, by going too small. Oversized chillers might seem like a good idea, but they operate at a reduced efficiency, resulting in decreased annual operating efficiency. By studying the operation of performance of your existing chiller and the cooling loads, you can more closely size a new chiller to meet your needs.

Have a question about your chiller? Email us at **MGA@MG-Architects.com** or give us a call if you have any questions about your chiller's performance, maintenance, or replacement. We can help you devise a plan that keeps you up and running with minimal disruption to your campus.



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