

APPLICATION SPOTLIGHT: Chilled Water (CHW)



The most common application for ONICON flow meters and energy meters is measuring chilled water (CHW), which is used to provide air conditioning in large facilities such as universities, hospitals, airports, office towers, convention centers, and data centers. Chilled water is produced in a chiller plant which may be located in the building itself or may be in an adjacent building. The water is cooled to about 45°F and is pumped to the associated air handlers and fan coils throughout the facility. As warm return air is blown across the coils, the water absorbs some of this heat which makes the air colder. The water (now around 55°F) is then pumped back to the chiller plant and the cycle repeats.



Universities use a chiller plant to provide air conditioning to different buildings throughout campus.

What makes the water get colder? Most of our customers use centrifugal chillers, which range in size from a Mini Cooper to a cement truck depending on the size of the system, and there are generally 2 to 8 of these in a facility. The pipe sizes on the main lines can be as large as 48" diameter, but are generally 10" to 12" while the smaller lines sending water to individual air handlers are typically 1" to 4". These chillers work like a typical home air conditioner which use a refrigerant like Freon, but they are MUCH larger and also more efficient.



Supply and Return pipes inside a chiller plant

The refrigerant is compressed so that it turns into a hot liquid and the heat is sent outdoors via evaporative cooling towers or air coils. Then it is allowed to expand into its gaseous state and it gets very cold. The cold refrigerant then absorbs heat from the 55°F return water, bringing it back down to 45°F. Chillers actually move heat from inside the building space to outside the space (compared to a gas heater that is burning fuel to make heat).

So where do ONICON products come into play? Chilled water systems and the associated energy costs are expensive. It is important to operate the chiller

efficiently which means using the least amount of energy required to ensure occupant comfort and productivity. Multiple measurements of water flow rate and temperature are needed to operate the system at peak efficiency.

By utilizing the data from our meters, facility managers and building owners can make system adjustments to ensure occupant comfort and productivity while maximizing energy efficiency. They also use the flow meter data for billing individual buildings or tenants and to monitor system performance over time. Energy measurements are determined by measuring temperature differences in the cooling water as it circulates through the system. Contractors can combine their own temperature measurement system with the flow output of our meter to calculate energy usage, but often select an ONICON BTU meter to improve accuracy and simplify installation.

To speak to a representative about our flow and energy measurement products, visit our contact us page.

To learn more about ONICON's flow and energy measurement products for chiller plant applications visit our products page.



ONICON Flow and energy meters used to calculate energy usage.