

Most designers of building HVAC systems recognize the value of using several chillers rather than relying on a single unit to provide chilled water for cooling. Not only does this redundancy provide a safety factor, but it also permits more efficient operation by using a combination of smaller chillers rather than running one large machine sized to the maximum load of the building.

PROBLEM

How can cost effective multi-chiller control be achieved? A Direct Digital Control (DDC) energy management system could analyze the building cooling requirements, and then select the correct combination of chillers and circulator pumps for the most energy efficient operation. This is very practical in large buildings or complexes, but in many smaller buildings using only two or three small chillers, a full sized DDC system is not practical.

SOLUTION

The Badger® Series 2300 Btu meter can control the staging of chillers based on temperature and/or their energy output. The Series 2300 uses two thermistors or RTD's to measure the temperature change across the load and flow signal from a Badger Meter impeller sensor or some other flow sensing device to measure the coolant flow. The user can choose to program the Series 2300 to display in Btu/hr, kW, Tons or a user defined custom unit. The Series 2300s microprocessor calculates the flow rate, energy transfer rate, supply and return temperature,

and differential temperature. This information can be used by four optional control relays to start or stop chillers and pumps to maintain optimum operating efficiency. Safety shut-downs based on low flow rate or low temperature conditions can be programmed as well. Analog and pulse outputs are also available.

EXAMPLE

A commercial building is cooled with three rooftop chillers each rated at 100 tons of cooling. The first unit is started manually or by a temperature input using relay #1 and provides cooling up to an output of 100 tons. At this point, relay #2 in the Series 2300 programmed in tons, starts chiller #2. Each relay may be programmed with an "On" time delay to prevent unnecessary starts and a deadband to prevent the second chiller from short cycling. When the full output of chillers #1 and #2 is reached at 200 tons, relay #3 (programmed in a similar manner) starts the final chiller. Additional relays may be used for alarm points based on temperature, temperature differential, flow rate or energy.

Using the Series 2300 provides control that is positive, flexible, and highly cost effective for small installations when compared to DDC systems.

Contact your Badger Meter representative for innovative control solutions.



Please see our website at www.badgermeter.com
for specific contacts.



BadgerMeter, Inc.

6116 E. 15th Street, Tulsa, Oklahoma 74112
(918) 836-8411 / Fax: (918) 832-9962
www.badgermeter.com