



Process Chiller Buyer's Guide

We are Challenging the Status Quo

Section Subject

Controls Matter

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Controls Matter: As micro processors have evolved over the last few decades, process chiller manufacturers now have unique opportunities to provide enhanced control features in a cost effective way. In this table we have listed features considered to be **CRITICAL** in today's process chiller market. We have placed these items in order of importance based on extensive customer interviews and 2013 market research. As with products that use programmable controls, developments can occur at a very fast pace. For this reason, we encourage our customers to look for future updates to the Process Chiller Buyer's Guide for the latest trends.

CRITICAL - Control Features

Control Key Feature	Feature Application
In-Place Screen and PLC Software Updates	The ability to update the control interface (screen) and / or the programmable logic controller without needing to remove these devices from the chiller. A common method is to download updates, ideally at no cost to the customer, from the manufacturer's website and transfer the files to the chiller's equipment via a USB jump drive.
Multi COMPRESSOR Automatic Lag/Lead	This critical feature assures equal wear and tear on the chiller's compressor(s). Once the lead compressor run hours have extended past the lag compressor hours by approximately 500 hours, service duty of the compressors will switch.
Multi PUMP Automatic Lag/Lead	This critical feature assures equal wear and tear on the chiller's system pumps. Once the lead pump run hours have extended past the lag pump hours by approximately 500 hours, service duty of the pumps will switch.
Remote Start / Stop	In some cases, process chillers are mounted in remote locations. In these cases, it may be advantageous to have the capability to turn the chiller on / off remotely. Having an input on the chiller's control system to perform start / stop is a critical feature.
Intranet Remote Control Access via Browser	Using a standard Internet browser, such as Internet Explorer or Firefox, user has the ability to access and control the chiller over a local area network. Note: In most cases this will require custom IP addressing.
Internet Remote Control Access	Using a standard Internet browser, such as Internet Explorer or Firefox, user has the ability to access and control the chiller over a wide area network. Note: In most cases this will require custom IP addressing and firewall port forwarding.
VPN Secure Remote Connectivity	Virtual Private Networking (VPN) is used to connect a process chiller remotely over a secure network connection. A VPN can be used to remotely connect to a chiller via an Intranet or Internet connection. VPN typically does not require firewall configuration.
Replaceable Plugin Control Relays	Process chiller control systems use pilot duty relays to control the various systems within the chiller such as compressors, pumps, fans and economizers. When these relays are board mounts it requires replacement of the entire board as compared to field replaceable plugin relays that result in much less downtime and cost.
Remote Alarming via Email or Text	Should a process chiller's operating condition become unstable, it is considered ideal for the chiller's control system to broadcast a trouble email or text. Note: In order to broadcast the chiller must be connected to the host building's network with access to the Internet. Some firewall configuration or VPN connection may be required.

Controls Matter (Continued): The table below represents features to be considered by the process chiller market to be **IMPORTANT** but not yet a critical need. According to our research many of these items are expected to become considered as critical control features over time. We have **BOLDED** control features most likely to make the jump from important to critical in the next 24 to 36 months.

IMPORTANT - Control Features	Control Key Feature	Feature Application
	Highly Visible User Interface	Process chillers operate in many indoor and outdoor applications. It is important that the user interface is visible, especially in bright sunlight situations, in order to easily control the features of the chiller control system.
	On-Screen User Help Information	It's a common occurrence for the chiller control and other documentation to disappear during or shortly after the chiller installation. An important feature is to have electronically stored use and troubleshooting documentation available on the process chiller's user interface.
	On - Screen Event Logging	An important feature is to have event history stored on the process chiller's user interface. The information can dramatically reduce diagnostics time especially when intermittent issues occur.
	Expandable Memory	As new process chiller control enhancements become available, demands on internal memory will inherently increase as well. As demand for memory grows, it is very important to have the capability to expand the control system memory.
	Multi-Chiller Lag Lead	In Mission Critical process chiller applications it is common to deploy multiple chillers to achieve cooling redundancy. In these circumstances multiple chillers must communicate and have the ability to perform lag-lead functions.
	Open Modbus (SLAVE) Register Available via TCP or RTU (Serial)	Since most process chillers are deployed within modern buildings that are equipped with building automation systems it is important to be able to read in, and in some cases control chiller functions from these building systems.
	Expandable Controller I/O	It is becoming more common for process chillers, post installation to require enhancements to meet site specific requirements. In many cases these enhancements will require more I/O. It is considered an important feature to have the ability to expand a process chiller's control system at any time.