

# Fermenter Temperature Control

## Burkert Fluid Control Systems

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FLUID CONTROL SYSTEMS

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## Fermenter Temperature Control

One of the most critical control and feedback parameters to overall beer quality and consistency in any brewery operation is the temperature control of the fermentation vessels. All too often this process is a manual one in which periodic checks and adjustments are made manually in order to keep temperatures in spec within a certain tolerable range. The craft portion of craft brewing is clearly a very important property to preserve both for the integrity of the brand and the uniqueness of the beer. This doesn't however, mean that basic automation is the enemy to a craft brewer. For a few specific applications in the brew process it's quite the opposite actually. By definition this sense of craft brewing incorporates a very hands on and interactive approach to the brewing process. This doesn't mean that we can't strive for consistency, repeatability and quality through the use of automation and advanced technology in certain critical and inheritly hands-off phases of the brewing process. Glycol flow based temperature control of the fermenter and brite tank jackets falls perfectly into this category.

This control philosophy has long since been widely adopted by the larger scale breweries where consistency, repeatability and efficiency of the brewing process are of absolute paramount importance.

However, due to the perception of these sorts of systems carrying extreme capital costs which make them unattainable to the smaller craft micro and nano-breweries, their installations are largely isolated to these higher cash-flow and very high capacity "mega-breweries". This perception combined with the ideology which defines craft brewing has largely led to the stagnation of potentially cost reducing and quality preserving automation technologies in the craft brewing industry. We're hoping to change this trend through education in brewing automation and developing widely accessible systems.

## Craft Under Control

We're craft beer drinkers, we have a passion for beer and this is one of the reasons that it has become a focused market for us at Burkert. This being said, we are part of that crowd that appreciates and to some extent demands a very hand-on craft approach be incorporated in the beer that we drink. We also have an in-depth understanding of the brewing process and understand when a brewmaster's magic touch is responsible for the results that we desire and when

automation will have a positive influence on brewery efficiency and beer quality without taking any of that magic out of the hands of the brewer.

There is no art to the temperature control of a large steel vessel. Depending on the type of beer being made and the stage in the brew, there are really only three ranges that temperature needs to be controlled within to yield the desired results. It's typically a 7-13°C (44.6-55.4°F) or 20-22°C (68-71.6°F) fermentation or 0-3°C (32-37.4°F) crash cool setpoint that needs to be maintained while counteracting the exothermic reaction generated by active yeast fermentation.

Taking the human component out of this eliminates the potential for error, the potential for spoiled batches and the potential for what we consider to be the greatest crime; wasted beer. Automation doesn't make mistakes, it doesn't miss a round of checking temperatures and it can see what's going on inside the tank and exactly what the fermentation process is doing to the temperature of that nearly finished perfect batch.

## Element Series Valves

Burkert Element series valves provide the highest level of process reliability, energy efficiency and they look great in your brewhouse while doing so. Internal piloting, positive pressure exhausting, moisture resistant electrical connections and highly visible visual cues are all contributing factors to what makes Element process valves the most robust and reliable valves on the market. All this while reducing your total operating costs in the brewery both directly and indirectly. Each of these attributes make Element valves particularly well suited for commonly damp and dusty brewery applications. These valves were specifically designed with market feedback in mind which suggested that in order to maximize reliability while minimizing both downtime and total cost of ownership, the valve housing needs to be impermeable to moisture and fine grain dust, both of which are inherit to a brewhouse environment. Configurable feedback signals to audible alarms as well as bright visual cues provide redundancy in the warning process should anything not be operating exactly as it should be for any reason at all. And if by chance these errors were to occur at 3:00am when the brewery is empty, cloud based controls can alert you via text message to any mobile phone.

## Custom Fit Solution

From 20 to 20,000 hectolitres we can custom tailor a solution to fit your brewhouse, your budget and your exact requirements. Single or dual zone fermenter temperature setpoints, brite tank crash cooling capabilities, mash / lauder temperature monitoring, centralized or decentralized control. We'll consult you through this process and design a unique system to suit your needs based on exactly what you are looking to accomplish in your brewhouse; nothing more and nothing less. Our local solutions team is fully equipped to design, program and commission a system that will be unique to you; from the number of temperature control loops to the branding, layout and functionality of your HMI screen. The level of complexity is completely up to you. Our goal is to design a system for you with your input at each step along the way to make sure that there are no surprises and that you end up with a system that is functional for exactly the way you brew. We're also there to see our system through full circle. We'll provide you with as much or as little training and support as you need to make this system optimally effective for you.

## Flexible Control

Picture on the bottom left is an example of centralized control utilizing a custom programmed and laid out 24" touch screen HMI. This brewhouse HMI controller consolidates all critical readings and parameters from dual zone fermenter temperature control, brite tank crash cool and brewhouse vessel (mash / lauder / boil) temperature monitoring simultaneously.

## Commitment to the Beer

Our goal here isn't to complicate your brewing process with non-beneficial technology or to make any changes that remove the craft aspect from your brew. We are committed to helping you bring the best, most consistent beer to your loyal beer drinkers while making your craft process a little more efficient.



Check us out and see what else is going on at Burkert Canada.