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# Tips for Choosing a Reliable Temperature Control System: Food & Beverage

The food and beverage processing and packaging industries require precise temperature control for their manufacturing processes, so whether it's for tightening tolerances, extruding chocolate, mixing dough, fermenting wine, or for packaging equipment, you need a temperature control partner with proven experience. Mokon's engineers have developed process heating and cooling equipment that ensure effective product control. Find out how to select the best temperature control system for you by following these five key steps.

## 1 Calculate System Size

The size of your temperature control system can make a significant difference when it comes to optimizing productivity and profitability.

Calculating the correct size of the temperature control system you need is crucial to achieving accurate process temperature control. The system size you need can be determined by performing a thorough calculation of the process load conditions required to ensure that the correct heating, cooling, and pump capacities for your control system are selected. It is essential to understand that the heating and cooling loads fluctuate depending on the materials used and the complexity of the materials being processed. Therefore, the size or capacity of a temperature control system must be designed to accommodate varying conditions.

### Typical equipment sizing elements to consider include:

- Ambient Conditions
- Type, Shape, Dimensions, and Weight of the Vessel or Tool
- Process Material's Specific Heat and Weight Per Hour Being Treated
- Process Temperature Range
- Control Requirements

When determining system size, you should always include a safety factor to allow for unknown or unexpected conditions. The size of the safety factor is dependent on the accuracy of the wattage calculation. Generally speaking,



Combination heating & chilling system, -20°F to 380°F (-29°C to 193°C)

the smaller the system with fewer variables and outside influences, the smaller the safety factor. On the other hand, the larger the system and the greater the variables and outside influences, the greater the safety factor. Here are some general safety factor guidelines:

- A 20% safety factor is average
- A 30% safety factor is recommended for larger systems with varying loads, cycle times, etc.

## 2 Choose the Right Fluid

Liquid temperature control systems provide a uniform medium for transferring heat or cooling, and control accuracy within fractions of a degree is possible when the correct system and options are selected.

Circulating liquid temperature control of your process can be handled through three different mediums: water, water/glycol, and heat transfer oil. The decision on which



Water system for cleanroom and sanitary environments

fluid type you should select depends on the temperature you are trying to achieve, heating and/or cooling loads, process flow capabilities, cycle times, material, etc.

## 3 Assess Control Features

Your process control demands accuracy and reliability, while operators need easy-to-use and highly visible controls and indicator lights. Microprocessor-based controls provide ultimate performance and are configurable to meet specific application needs. These can greatly optimize your process. Mokon makes a variety of options available to ensure that you are obtaining easily configured and optimal results.

**For more information on process heating and cooling equipment for the food and beverage industry, contact Mokon today.**

## 4 Plan System Installation

For optimum performance, make sure to plan out your system's location and ensure that it's in an area that provides adequate space and ventilation. Before installing/starting up any temperature control system, read the manufacturer's instruction manual and follow their procedures carefully. Complete an inspection of all electrical and mechanical components of the system including wires, fittings, etc.

## 5 Prolong The Life Of Your Temperature Control System

Preventive maintenance procedures should regularly be performed to keep the system clean and well-maintained. Performing weekly, monthly, and quarterly checks will extend the life of your system.

By following some basic guidelines before, during and after installation, you can avoid problems and ensure that your temperature control system will provide a high level of efficiency and reliability.



Multi-zone water system for wash down applications



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