

SUPERHEATED STEAM FOR FOOD PRESERVATION

Steam drying increases harvest yields

Application

Harvested food preservation has become more important as climate change has impacted the global food supply. Countries capable of producing more are encouraged to do so by consumer demand. Often they lack the equipment and resources to quickly harvest and move their agricultural products to market. Once harvested, moisture within the product may begin to degrade that will result in post-harvest losses. To overcome this problem, superheated steam drying (SSD) is employed to preserve the harvest.

SSD uses steam at temperatures ranging from 572°F to 932°F (300°C to 500°C). The steam can quickly transfer energy for drying and still maintain temperatures high enough to prevent condensation. Super-heated steam is like hot air drying, but superheated steam dries faster, resulting in healthier products, increased production rates, and decreased harvest loss.

There is one component in the system that must be addressed to ensure success. Superheated steam must be transported from the boiler to a drying oven, and elevated temperature must be maintained. A decrease in steam temperature as it travels through the piping means less heat will be used for drying, resulting in higher steam production requirements and reduced efficiency. In extreme cases where steam temperature is not maintained, steam can condense and ruin the harvested food.

Solutions

BriskHeat's XtremeFLEX® heavy insulating heating tapes coupled with high-temp insulation solve the heat-loss problem. The tapes are constructed with fiberglass or Samox® material that can be operated at temperatures as high as 1,400°F (760°C). They are extremely flexible to easily wraparound pipes and have durable multi-stranded heating wire. The IP5X rating means they can be used in dusty environments. Insulated cloth tapes on the recycle line adds extra efficiency to the system.

Custom engineered cloth insulators manufactured with beta cloth and high-temperature ceramic wool lock in the heat from the tape to maximize efficiency. They are rated for temperatures up to 900°F (482°C). Additionally, they feature high-temp hook and loop closures for repeated installation and removal. An MPC2 Multi-Point Temperature Control Panel will effectively control the heating tapes' temperatures. This controller allows the operator to see the current and setpoint temperatures of each heating zone and has excellent accuracy. MPC2 controllers can simultaneously control multiple zones and interface with a process control system when required.

Alternative Solution

An alternative solution is a system composed of high-temperature custom engineered heating jackets with an integrated LYNX® Temperature Control System. Separate control modules can be programmed individually at each jacket or controlled on a LYNX® Operator Interface. Accuracy is high, programming is easy, and LYNX® is also capable of interfacing with a process control system.



Products

BIHE, BWH, & BWH-D Insulated Tape
Custom Cloth Insulators

LYNX Control System
MPC2 Multipoint Control Panel

Industries

Agriculture/Farming
Food & Beverage Processing

Types of Users

Facility Planners
Industrial/Process Engineers
Maintenance Managers
Piping Contractors