



Air Management Technologies, Inc.
Building Energy & Environmental Services



Guaranteed Solutions:

Process Cooling

- ◆ Mixer & Sponge Systems
- ◆ Chilled Ingredient Water
- ◆ Finished Product Cooling
- ◆ Blast Freezing
- ◆ Refrigeration

Process Heating

- ◆ Water Heating
- ◆ Steam & Hot Water Systems

Environment Conditioning

- ◆ Proofing/Retarding
- ◆ Spiral (Finished) Products
- ◆ Oven Steam
- ◆ Mold & Particulate Control

Industrial HVAC

- ◆ Makeup Air Systems
- ◆ Spot Cooling
- ◆ Space Pressurization
- ◆ Filtration
- ◆ Mechanical Cooling
- ◆ Ventilation

Waste Heat Recovery

- ◆ Ovens & Oxidizers
- ◆ Solar/Fuel Cells
- ◆ Compressed Air
- ◆ Industrial Fryers

Specialized Technologies

- ◆ Absorption Refrigeration
- ◆ Cascade Refrigeration
- ◆ Industrial Heat Pumps
- ◆ Solar/Fuel Cells
- ◆ Organic Rankine Cycle

Industrial HVAC Systems

Design Criteria

Industrial HVAC Systems for Food Processing Facilities have evolved over the years from design objectives that were primarily comfort driven to those that now equally consider Food Safety and Quality as well as the impact on production equipment operations. Some key elements include airflow relationships between zones to minimize the spread of airborne particulates and heat, facility pressure relationship to the outdoors to control infiltration of insects and molds, air filtration designed to protect product as well as temperature control to manage occupants heat stress and product cooling requirements.



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Facility Zoning

It is common practice in most new baking facilities to separate the bakery into zones. This concept allows areas that have the highest occupant densities, such as makeup and packaging, to be controlled at more comfortable conditions while the Bakeshop area containing the ovens and proofers may only have ventilation and is designed for intermittent occupancy. This area is more production focused. Some drawbacks by zoning is that care must be exercised regarding locations of production equipment, introducing more airflow dynamics between zones, and that line of sight may be compromised by partition walls but with proper design all these factors can be dealt with.

System Operation

Numerous design concepts exist depending on the application and owner requirements. In recent years, there has been a move to use more mechanical cooling in high occupant areas and ventilation only in others. When air exchange is the basis of design, mechanical spot cooling can be provided in areas of high occupant density. It is important that the entire ventilation system be controlled in unison and not as separate equipment or desired results may not be achieved with increased energy cost. When possible, product cooling should be performed in a separate enhanced conditioned space.



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Cooling



Occupant heat stress standards need to be maintained which normally is not a problem when mechanical cooling is used; however, with ventilation only systems an issue may be present during unusual hot spells. In some cases, thermal storage from process refrigeration can provide energy needed for spot cooling systems. UV lighting is optional to protect coil and drain pans from microbial growth.

Heating



Since baking facilities consume large amounts of exhaust air through the baking process, makeup air needs to be supplied in the wintertime to compensate for the air that has been lost. The first step should be to use the internal heat that is generated by the process in areas such as pan storage, oven area, etc. When this is not enough, sources such as direct or indirect fired gas and or heat recovered from other process sources is needed.

Mold & Particulate



Space mold and particulate levels are controlled in several manners that include air filtration as well as facility pressurization that prevents any particulates or insects from entering through dock doors and other openings. When possible, product cooling should be performed in a separate conditioned space.

Humidity Control



Space humidity can be controlled but is not common except when Blast Freezing operations are used; however, even in this case, it many times it makes more sense to provide conditioned vestibules.

Sustainability & Cost Saving Benefits



It is very important to make use of various options to save energy as it is expensive to operate ventilation systems. Simple housekeeping measures to prevent air leakage to the outdoors, economizers for free cooling, variable speed drives on fans and waste heat recovery from various processes provides decreased operational cost that is half that of inefficient systems. Proper design provides a win-win both in return on investment as well as reduced carbon emissions.

About Us

FoodTherm was established in 2015 by the shareholders of Air Management due to our significant growth in the Food Industry. This move has allowed increased focus on providing innovative solutions that not only enhance Food Safety and Quality, but also do so in a efficient and sustainable manner. Our 24 years of demonstrated ability in the Food Industry provides customer value in that we have “been-there-and-done-that” with a written performance guarantee that places the responsibility in our hands and the life cycle benefits in yours.



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