AIR MANAGEMENT TECHNOLOGIES, INC.
Building Energy & Environmental Services

FoodTherm INC.
Food Process • Thermal & Energy Solutions

Proofer Heat Pump

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

Bakery Use Overview

Proofers are process rooms designed to provide the perfect environmental conditions for achieving consistent dough development. The environmental systems for proofers provide tightly controlled heat and humidification. These systems are energy intensive with heat and humidity supplied by steam boilers or electric strip heaters/humidifiers. Many bakeries have been searching for alternatives to steam boilers due to maintenance requirements and boiler chemical use in a food processing facility.

Operationally, steam boilers are notoriously inefficient operating at around 70% final efficiency in a newer, well maintained system. While electric heat is 100% efficient, the cost of electricity for that heat is four to five times higher ($ per Btu) than using gas. Air Management Technologies in response to these requests has developed a Proofer Heat Pump for bakery applications. Our newest Guaranteed Solution may be able to replace your traditional boiler with a system operating at *TWICE* the efficiency of a steam system—plus also generate free ice "ingredient" or chilled process water.

Heat Pump Types

Baking facilities use both heating & cooling simultaneously during their processes which creates an opportunity to utilize Industrial Heat Pump (IHP) technologies. IHP's can be driven by electric (IEHP) or gas fired (IAHP). Technology selection is usually based on the cost of utilities and application requirements. A heat pump operates by extracting heat from one source and moving this heat to a different application. With sizes ranging from 5 to over a 1,000 tons, ROI will typically be immediate on new installations and less than 4-years in retrofit applications.

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Applications

- Southeastern United States/Mexico/South America have regions which struggle with high summer proofing temperatures. An Air Management Proofer Heat Pump can automatically provide heating or cooling.
- Can provide water heating when proofer load is below maximum (non-cold start in winter).
- Gas-fired models can be used for Oven Steam providing feedwater pre-heat.
- May be combined with other Air Management Technologies Closed-Loop Energy Systems (scalable).

Science

From a scientific perspective, the reason that IHP's are so efficient is that the energy absorbed by the heat source is added to the energy input. For example, a 1,000,000 BTUH input boiler that operates at 80% efficiency provides 800,000 BTUH. With the same input, energy to IAHP with a 0.7 (COP) will provide 1,400,000 and free 50-tons of cooling.

Cold Side

Proofer Cooling / Retarding

Chilled Ingredient Water

Glycol "Mixer" Refrigeration

Hot Side

Proofer "Dry" Heating

Hot Water Heating

Steam Pre-Heating

Sustainability & Cost Saving Benefits

We understand it is important in business to drive out cost. The Proofer Heat Pump provides a economical pathway while also helping you demonstrate environmental stewardship. Our industry has a unique opportunity to lead the way with processes which allow Closed Loop Energy Systems to capture waste streams, returning them as useful process energy, providing you both substantial energy savings and significant carbon reductions.

Heating efficiencies are ***double*** conventional systems. An existing newer steam boiler through piping and losses is typically 70% efficient compared to 120% for an air-sourced heat pump and 140% for a water-sourced heat pump. The ability to additionally provide free chilled water or glycol cooling (Co-Generation) in a single packaged results in additional savings.

Systems can be designed to operate on both natural gas where electric cost is high, or electric only where gas cost is high or unavailable. The Air Management Technologies' Proofer Heat Pump may also qualify for energy efficiency incentives depending on the geographic location. Ask us today how our newest innovation will benefit your facility.

About Us

Air Management Technologies has delivered energy, thermal process conditioning, and environmental solutions for over twenty years. Our written performance guarantee places the responsibility in our hands and the life cycle benefits in yours. Cost conscious decisions are made with the customer in mind and every project is guaranteed to operate as specified.

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