



Air Management Technologies, Inc.
Building Energy & Environmental Services



Industrial Heat Pumps Food Process Facilities

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

Heat Pump Types

Commercial and Industrial Baking facilities simultaneously use both heating & cooling in their processes which allows the unique opportunity to benefit from Industrial Heat Pump



(IHP) technologies. IHP's can be driven by electric (IEHP) or gas fired which is commonly referred to as absorption heat pump (IAHP) and are selected based on the utility costs and application.

Heat pumps operate on the premise of extracting heat from a source and moving this heat to another with sizes ranging from 5 to over a 1,000 tons. IAHP efficiencies are double that of a traditional boiler and they provide "free" cooling so the return on investment is normally immediate on new installations and less than 4-years in retrofit applications.

Conventional heat pumps used for space heating and cooling normally only benefit from a single source with the outside air. In the case of geothermal the ground would be the heat sink. In baking facilities, this process is in many cases two fold since the heat sink benefits when it is a process load that you want to remove heat from such as ingredient chilled water, glycol refrigeration, product refrigeration to name a few. HP's can range in size from 5 to over a 1000 tons.

Applications

Numerous design concepts exist. One plant's opportunities may differ from another based on the processes, utility rates, and system limitations such as capacity shortcomings. Electric and Absorption heat pumps can operate at various temperatures depending on requirements and can also be used to amplify low temperature energy sources once considered to not be usable to high temperature heat output. Some applications could include cooling towers, air compressors, refrigeration, waste water streams and even ovens as a heat sink of energy to be used for a process that requires higher temperatures. Some common opportunities related to the baking industry:

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

- Chilled Ingredient Water
- Glycol Refrigeration
- Refrigeration



Hot Side

- Water & Space Heating
- Steam Feedwater Preheat
- Washers

Waste Heat Absorption

In cases where ovens have air pollution, devices such as oxidizers IAHP can be driven from this waste heat source rather than gas to even further decrease the amount of energy required with even increased efficiencies over standard IAHP. In many bakeries that fall in this classification, the system can provide enough energy for the average process loads from mixers, chilled water, as well as the heating for proofers, water, and makeup air from this one source....wow! Normally, conventional systems still reside as backup but when initial startup loads are established, remain idle.

Sustainability & Cost Saving Benefits

We understand it is important in business to drive out cost and IHP's provide a way of doing this while also demonstrating environmental stewardship. In the baking industry, we have a unique opportunity to lead the way with processes designed that allows Closed Loop Energy Systems to capture waste and return it as useful process energy providing both energy savings and carbon reductions.

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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