



Commercial & Industrial Bakeries

Oxidizer/Oven Heat Recovery System



Several years ago Air Management Technologies was approached to develop a way to **eliminate the use of boilers in bakeries** and **reduce energy cost**. It may have seemed far-fetched at the time, but it is now a reality with several successful installations throughout the United States and Canada. Thanks to Air Management Technologies' Oxidizer/Oven Heat Recovery System, it is now possible to eliminate the standard boiler room in exchange for an innovative heat recovery system, which can supply required heat to proofers, process water heating, tray washing, and various other areas of the facility.

Traditional Method

Steam boilers have been the traditional method of providing process heating in bakeries for many years. Given their ability to directly satisfy the humidification "wet-heat" requirements and serve as a reliable heat source, steam boilers were a good fit at that time. However, things have changed. Energy costs have more than doubled over the past few years and volatility is still a major concern. Thus, efforts must be taken to remain competitive. Air Management Technologies' Oxidizer/Oven Heat Recovery System is a step in the right direction.

Why Oxidizer / Oven Heat Recovery Systems?

- Significantly reduces energy usage and environmental impact
- Can result in lower installation costs versus steam
- Eliminates the need for a traditional boiler room and associated building costs
- Saves maintenance costs with no feedwater treatment and boiler maintenance

Engineering & Design

For more than 16 years, Air Management Technologies has set the standard in providing superior building energy and environmental services. Using the team's expertise in managing efficient energy distribution and control, Air Management Technologies will engineer and install a heat recovery system that will efficiently distribute and control the energy source while capturing the generated waste heat from the oven(s) or oxidizer exhaust streams to arrive at a complete system that will generate guaranteed savings!

Recycled Energy Can be Diverted to:

- Proofers
- Fermentation Rooms
- Plant Water Heating
- Feedwater
- CIP
- Space Heating
- Tray Washers
- Makeup Air Systems
- Sodium Hydroxide Tanks
- And More



Oxidizer/Oven Heat Recovery System

How Does it Work?

System operation is accomplished by utilizing heat from the oven exhaust stream that passes through the plant's oven(s) and/or catalytic oxidizer, which is equipped with a recovery coil and control elements to regulate the heating output. Our proprietary Sustainable Waste Heat Management System (SWHMS) consisting of two copper-tube water heaters, fluid cooler (optional), pumps, controls and specialties manages the waste heat recovered and serves several purposes including backup in case of primary system failure, operation during cold starts, and as a peaking device to maximize the recovered energy. This system assures constant supply of heat to the processes during all modes of operation and is typically located outdoors eliminating need for building space and many boiler room code and operator requirements.

A central hot water glycolic distribution loop provides heating from the recovery system to end uses at a temperature between 200°-210°F. By incorporating a combination of compressed air atomization and/or high-pressure humidification systems to proofers and fermentation rooms, both dry and wet heat loads are satisfied at a fraction of the cost. Control of the processes is maintained by a combination of direct digital or programmable logic controls and interfaces with vendor equipment.

Guaranteed Energy Savings

When implementing a project like this, return on investment is a primary goal. With new installations, the cost is many times completely defrayed by eliminating the conventional steam boilers. Thus, savings immediately begin providing a positive cash flow!

- Two-line plants can save \$40,000-80,000 per year in energy costs.
- The system also provides a degree of protection against natural gas price volatility. Savings will increase proportionally with natural gas prices.
- Heat recovery is also very efficient, delivering greater than 98% of the energy, compared to traditional boilers, which deliver only 70%.
- The system is monitored 24/7 by a Web-based controller that allows remote access to the system.



Environmental Benefits

Environmental impacts now and in the future are a major consideration as we see an increased commitment to managing air and water quality to improve the environment. This is a major driving force behind this type of project, which will eliminate several hundred tons of greenhouse gas emissions per year!

Get Started Today!

When considering all of the benefits of heat recovery, it is hard to imagine constructing a bakery without implementing this design concept. In most cases, new installations will provide a positive cashflow from startup. There is also ample opportunity to retrofit existing plants with typical returns ranging from 15-25%. These retrofit costs can be offset to provide a quicker return when capital can be attributed due to a need to replace or upgrade existing boilers.

Heat recovery can be applied in facilities with or without oxidizers. Oxidizers have an advantage with increased availability of heat and centralized heat exchangers. However, recovery can also be implemented in facilities that don't have oxidizers, and will still satisfy most production heat load requirements. This technology has also been explored in other industry sectors such as snack foods with positive results. The future of bakery energy management is available today.

