KORNFEIL

Thermal Oil Biomass Boilers

BioTherm

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Eco-friendly and affordable heating of bakery ovens

Save on costs and energy in heating bakery ovens while disposing of your waste, including surplus bakery products. BioTherm utilizes low-cost sources of energy and does not depend on natural gas supply.

What is BioTherm?

BioTherm is an eco-friendly alternative to conventional heating of bakery ovens. BioTherm only uses renewable energy sources, such as pulp chips, pellets, as well as unused remains of bread and other bakery products, as the heating fuel. These are mainly more affordable sources of energy, including wastes products from forestry operations and the surrounding environment in general. As a result, the bakery is no longer dependent on natural gas and other fossil fuels susceptible to constant increases and fluctuations in prices.

On what basis does BioTherm function?

The heat transfer fluid, that is, thermal oil, gets heated to 572F and is subsequently distributed via a storage tank to all bakery ovens. It's performance is regulated by the heat requirement for each oven. BioTherm can also work in conjunction with another thermal oil boiler running on natural gas, used as a backup. It is up to the individual user to decide what fuel the bakery prefers. BioTherm boiler can burn either pulp chips and pellets or a mixture of product leftovers combined with pulp chips or pellets in a 1:3 ratio.

BioTherm control system

Operating the thermal oil boiler is very simple and convenient. BioTherm is outfitted with a well arranged touch screen where all basic operational parameters, such as the fuel type and oil temperature, are set. All operating indicators can also be monitored here.

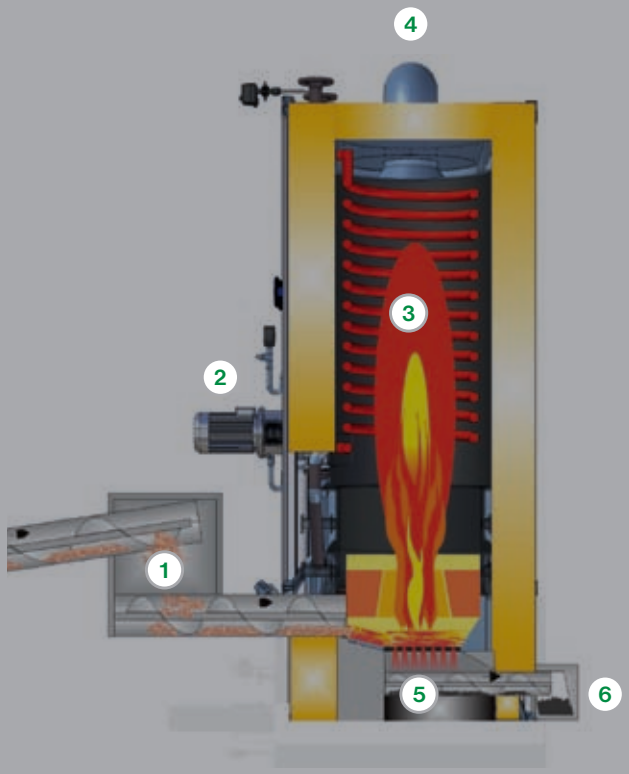
Computer controlled functions

- automated process of fuel supply
- optimal combustion using lambda sensors
- moving combustion grate for automated ash removal
- boiler output ranging between 30 – 100%, based on individual parameters

Automated boiler cleaning

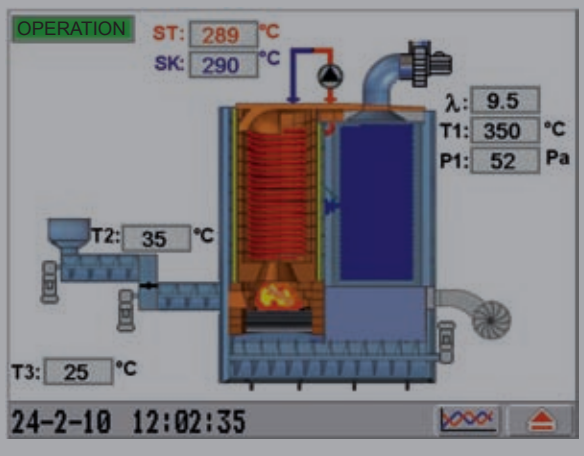
The cleaning of thermal oil boilers and all heating coils is fully automated. The ash removal is also automated; in general, only a small amount of ash is accumulated; between1 and 1,5% of the fuel volume. Forget all about waste liquidation – BioTherm does it for you.

Thermal oil boiler design



1. automated fuel supply
2. thermal oil pump
3. combustion chamber
4. waste gases outlet
5. automated ash removal
6. ash container

Monitoring of the boiler's functions



Effective utilization of surplus products

BioTherm boilers eliminate a problem bakeries must deal with on a daily basis – the disposal of unused bits and pieces of bread and other bakery products, including rejected products. Hypermarkets and large bakeries can further save on costs of transporting their unsold products to incineration houses and bio-stations. The practice of burning residual products directly in the bakery is a reliable, safe, and cost-effective way of waste liquidation, providing a free fuel as a bonus.

Fuel parameter

Type of fuel	Wood chips	Pellets	Old bakery products
Fuel profile	ONORM M 7133	ONORM M 7135	
Heating capacity	4 MWH/ TON	5 MWH/ TON	3, 9 MWH/ TON
Batch weight	145 lbs/ gallon	379 lbs/ gallon	204 lbs/ gallon
Size (inches)	G30/ G50	0, 2 - 6	0, 2 – 1, 6
Humidity	15 – 35 %	< 10	20 – 25 %

*at 25% humidity

The Advantages of BioTherm boilers

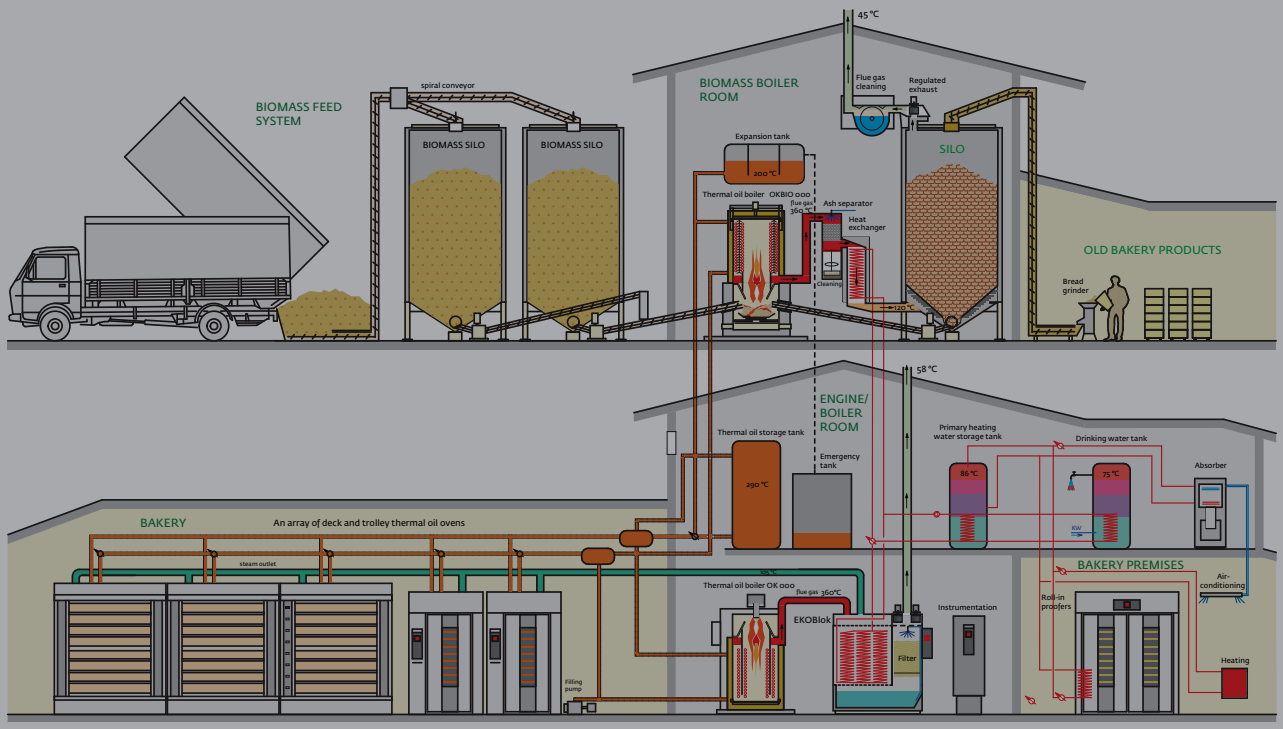
- Eco-friendly and cost-effective heating of bakery ovens
- Elimination of surplus bakery products – free energy
- Fully automated heating medium for great control comfort
- Affordable in-house produced heating medium independent of heating oil and natural gas
- Materials supplied by local farmers and foresters – regional recycling
- Energy-efficient system

Suitable types of fuel and their parameters

Wood chips

Pellets

Old bakery products



Technical data	BioTherm 200	BioTherm 500
Rated capacity [kW]	200	500
Capacity range [kW]	60–200	150 –500
Maximum oil temperature [F]	572	572
Electric input [kW]	6.8	13
Electrical system	400/ 230V. AC/ 50Hz	400/ 230V. AC/ 50Hz
Heating surface [sg.fts]	166.8	417.4
Oil volume [gallon]	40.4	103
Rated circulating volume [gallon/ h]	2932.3	731
Boiler efficiency [%]	90	90
Boiler connections – input [ø inches]	DN 2. 4	DN80
Boiler connections – output [ø inchces]	DN 2. 4	DN 80
Boiler length [inches]	78. 7	126
Boiler length, including accessories [inches]	94. 5	141.7
Boiler height [inches]	122	137.8
Boiler width [inches]	47.2	78.7
Boiler width, including accessories [inches]	68.9	102.4
Weight [lbs]	4,409	3,370

Waste gases data

Output [kW]	Efficiency[%]	CO_2 [%]	CO [mg/MU]	Dust [mg/MU]
200	90	14.7	10	32
65	87.6	11.6	38	20

Output [kW]	Efficiency[%]	CO_2 [%]	CO [mg/MU]	Dust [mg/MU]
500	90	15.8	7	52
150	86.4	10.8	20	28

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