



# KleenHeat® Pollution Control Heat Exchanger



*Without KleenHeat*

*With KleenHeat*

## *The KleenHeat Difference!*

*Efficient heating  
of cooking oil with  
superior pollution control*



**HEAT AND CONTROL**

## KleenHeat® Pollution Control Heat Exchanger

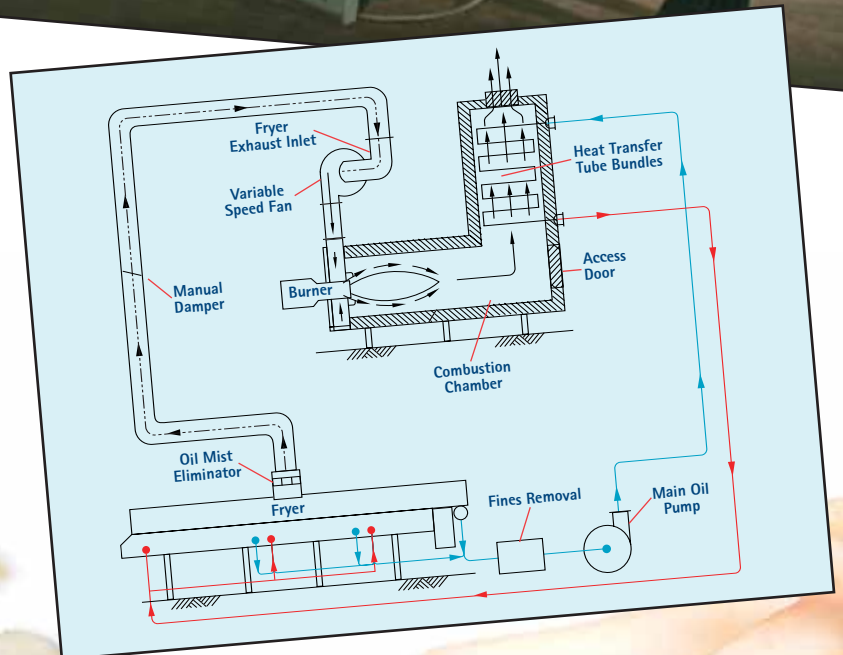
Remove oil, odors and particulates from fryer exhaust with this high-efficiency heat exchanger.

KleenHeat® combines efficient external heating of cooking oil with superior pollution control. Surpassing simple afterburner technology, KleenHeat connects to your fryer exhaust stack and incinerates virtually all odors, oil and other particulates that would normally pollute the air and area around your plant.

Regulatory agencies worldwide recognize KleenHeat's pollution control method as the "Best Available Control Technology" (BACT) and increasingly require this equipment for new and upgraded fryer lines.

KleenHeat exceeds the thermal efficiency of ordinary heat exchangers that don't offer pollution control! Low oil volume promotes fast oil turnover and inhibits formation of free fatty acids. Rapid, uniform heat transfer allows your fryer to respond quicker to changes in product load, and protects oil quality by maintaining a low oil film temperature.

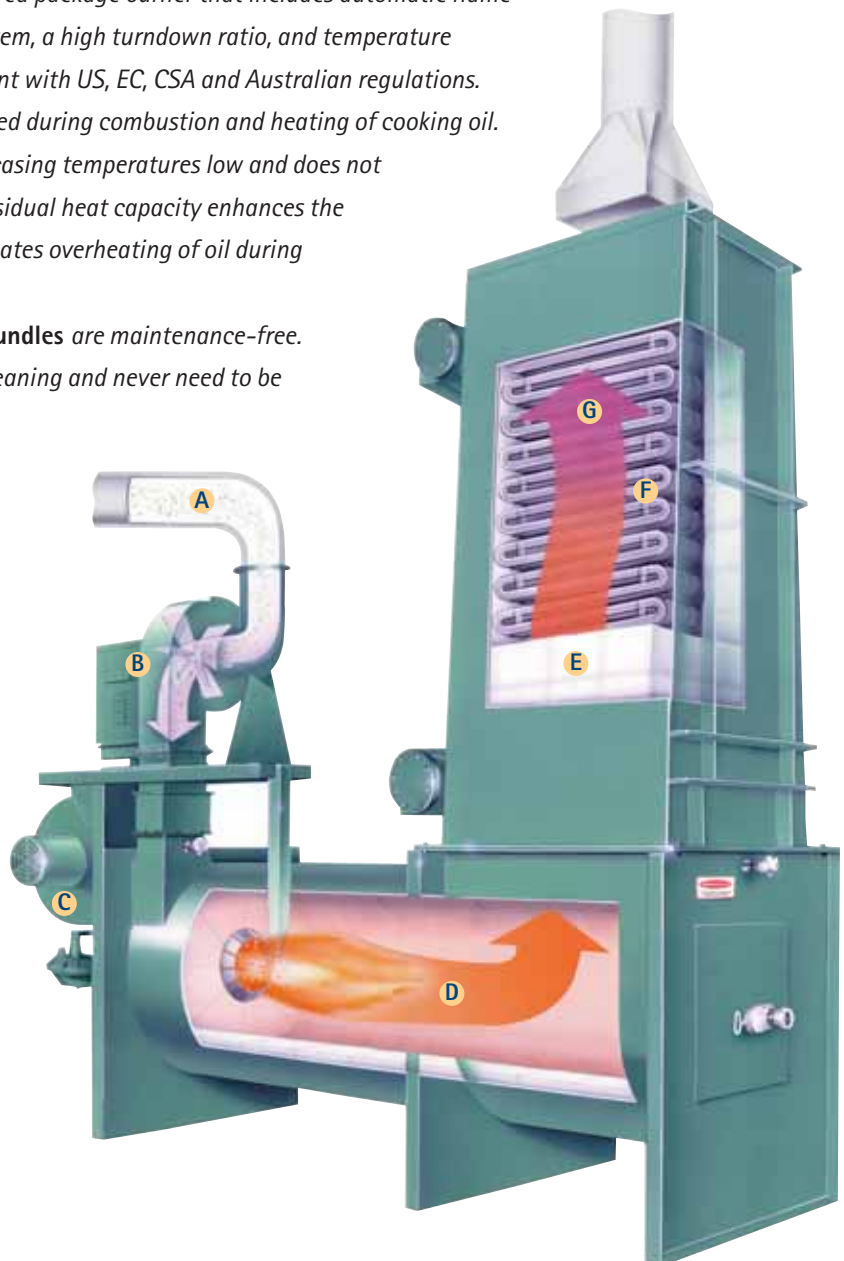
Fines never accumulate inside KleenHeat's unique self-cleaning cooking oil circulation tube bundles. Tubes last longer and cleaning is accomplished during routine fryer system boil-out.



Typical KleenHeat installation.  
All components supplied by Heat and Control.

## The KleenHeat Difference

- A** Fryer exhaust containing water vapor, cooking oil droplets, odors and particulates passes through an Oil Mist Eliminator in the fryer stack and enters KleenHeat.
- B** A single heavy duty gas-tight fan delivers exhaust pollution into the combustion chamber. The variable speed fan automatically modulates the flow to maintain optimum pollution control performance.
- C** Every KleenHeat includes a pre-piped, pre-wired package burner that includes automatic flame modulation, a diagnostic flame protection system, a high turndown ratio, and temperature readouts for system monitoring. Fully compliant with US, EC, CSA and Australian regulations.
- D** Pollutants and odors are thoroughly eliminated during combustion and heating of cooking oil.
- E** Lightweight ceramic fiber insulation keeps casing temperatures low and does not deteriorate from age or thermal stress. Low residual heat capacity enhances the temperature control characteristics and eliminates overheating of oil during unscheduled shutdowns.
- F** All welded stainless steel serpentine tube bundles are maintenance-free. Completely self-draining, the tubes are self-cleaning and never need to be "rodded". Inlet and outlet headers are easily inspectable, requiring no hoists or platforms. Normal thermal expansion produces no stressing or buckling of the tubes, assuring years of reliable, trouble-free operation.
- G** KleenHeat is the only pollution control system designed to compensate for the radical change in heat transfer dynamics from the bottom to the top of the heat exchanger. Our innovative "graduated density" tube bundles allows heat to transfer evenly without hot spots – providing low oil film temperatures throughout!



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## High-Efficiency KleenHeat saves up to 2.7 million BTU/hour!

Combine our Combustion Air Preheater with the KleenHeat for sustainable fuel savings. This high efficiency model operates at 93.6% net efficiency (83.6% gross efficiency) on a 6,500 pound/hour potato chip line and reduces fuel usage by 2.7 million BTU/hour. You can save hundreds of thousands of dollars in fuel costs each year using the HE-KHX, and still reduce emissions of air pollutants.

### KleenHeat options include:

- Hot water condenser for enhanced plant efficiency.
- Make-up oil pre-heating.
- Oil Mist Eliminator for existing fryers.
- Burner systems designed for your fuel, insurance, and safety requirements.
- Stainless or painted steel casing.
- Custom sizing and configurations.



*Constant improvement and engineering innovations mean these specifications may change without notice. Burner packages may vary depending on application, fuel and installation location.*

**HEAT AND CONTROL**®



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