Making sense of risk

Industrial oil cookers

Asia Pacific

Liberty

Industrial oil cookers

Industrial oil cookers commonly used in the food processing industry present significant hazards. In essence, these are large containers or tanks filled with a combustible liquid which is heated, and they require related heating, ventilation and electrical equipment. They may contain a few hundred to a few thousand litres of cooking oil and they typically have large open surfaces.

Oil cookers use a direct or indirect heating source. Direct heating involves a heat source or burner that is in direct contact with the cooking oil. Indirect heating involves a heat source or burner that heats an intermediate liquid, such as water, which is then used to heat the oil.

Indirect heating is generally safer than direct heating and is the preferred option of Liberty.

Oil storage tanks, ventilation systems, electrical wiring, and heating, fire protection and extinguishing equipment should be inspected regularly.

Protection

Since raw and finished food products are easily contaminated by smoke and heat, oil cookers should be regularly maintained to prevent overheating and possible fire. Oil cookers should be separated from other food production and storage areas and should be housed in non-combustible rooms that have a minimum one-hour fire rating. They require a well-designed fire protection system: all buildings or areas housing oil cookers should be fully protected by a sprinkler system, in accordance with local safety standards.

Curbing and drainage should be provided for the area surrounding each oil cooker to prevent the spread of hot or burning oil in the event of a leak or fire. Curbing should be sufficient to contain the largest volume of oil in a single cooker. Drainage from all oil cookers should be directed away from adjacent cookers.

The following measures should be in place to help prevent and minimise losses:

- A local fire alarm should sound in the same room as the oil cooker if any interlock, protection system or shutoff is activated. The alarm should also transmit a signal to the main fire alarm panel and any supervising station.
- An appropriate manual-reset temperature control should be installed to shut down the heating equipment and any conveyor systems if the oil temperature exceeds the normal operating temperature by 25 degrees Celsius.
- A low-liquid level switch should be installed to shut down the oil heating equipment if the oil level drops below a predetermined level.
- A remote manual emergency shutoff, located along an egress route from the area, should be provided for all oil cooker heating equipment.
- Heating equipment, conveyors and ventilation systems should be interlocked to shut down automatically in the event of a fire or loss of adequate ventilation.
- A local application fire protection system, such as a deluge water spray, water mist, or foam-water deluge should be in place to protect the oil cooker, exhaust ductwork and combustion chambers containing cooking oil heat exchangers or direct heaters.

Testing and maintenance

A written maintenance programme should be implemented that includes:

- regular inspection and cleaning procedures for all oil cookers, following the oil cooker manufacturer's maintenance procedures and recommendations
- regular inspection and cleaning procedures for all ventilation systems
- regular removal of all oil residue and unnecessary combustible materials from equipment, ductwork and surrounding areas
- regular inspection of the extinguishers and fire protection systems (sprinklers, for example) in accordance with regulations, the latter by a certified contractor.

While adherence to these minimum procedures may help a business owner or manager protect their premises from hot oil fires, they do not contemplate every potential scenario for loss or damage. It is important, therefore, that the property Fire Safety Manager should regularly review the placement, use and maintenance of all oil cookers onsite and ensure that the appropriate safety measures are in place. They should also take responsibility for ensuring that personnel have been adequately trained in the use of oil cookers.

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Australian Standard 1851, Maintenance of fire protection systems and equipment.

Australian Standard 2118, Automatic fire protection systems.

NFPA13 Standard for the Installation of Sprinkler Systems.

NFPA 16 Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems.

NFPA 30 Flammable and Combustible Liquids Code.

NFPA 34 Standard for Dipping and Coating Processes Using Flammable or Combustible Liquids.

NFPA 96 Standard for Ventilation and Fire Protection of Commercial Cooking Operations.

NFPA 750 Standard on Water Mist Fire Protection Systems.

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