



Case study: AIR TREATMENT
Heat Exchangers Utilized in Fishmeal
Processing at Dupps

BENEFITS

- Easily incorporated into pre-existing system
- Efficient energy recovery
- Easy to clean
- Odor control

Innovative Design Provides Energy Recovery and Odor Control

The Dupps Company manufactures processing systems that turn fish by-products into protein-rich fishmeal, organic fish solubles, and fats such as omega-3 fish oil. These by-products are used in various ways with countless benefits. Fishmeal is a popular ingredient in animal feed as it is one of nature's best protein sources. Fertilizer made of fish soluble products produce stronger plants and increased crop yields. In addition, numerous studies have shown the health benefits of consuming omega-3 fatty acids from fish oil.

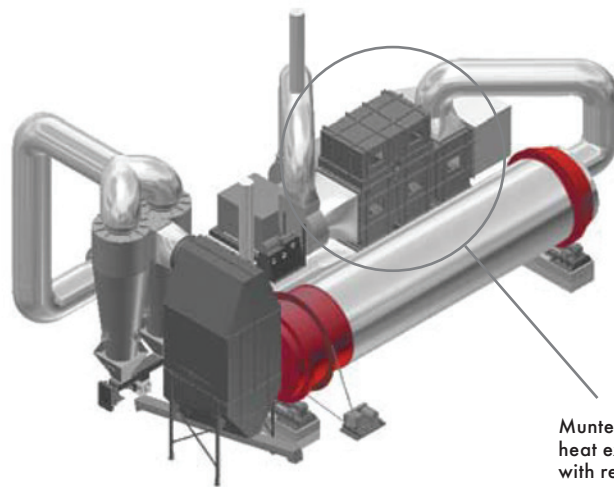
Dupps recently purchased two custom designed and manufactured Munters heat exchangers for use within their systems. The equipment, three pass tubular heat exchangers with removable cores to facilitate cleaning, is used as an indirect gas fired heater during the drying process of the fishmeal. Recirculation of the process gas by the heat exchanger contains the

unpleasant odor typically associated with this process. In addition to controlling odor in the community, the Munters heat exchanger system helps Dupps efficiently produce fishmeal processing systems.

Heat recovery

Munters designed and supplied a

special three (3) pass tubular heat exchanger to incorporate removable tube bundles to facilitate annual cleaning. The three (3) pass design recovers over 64% of the available waste energy or 21 MMBTU/HR resulting in significant fuel savings and energy cost reduction to operate.



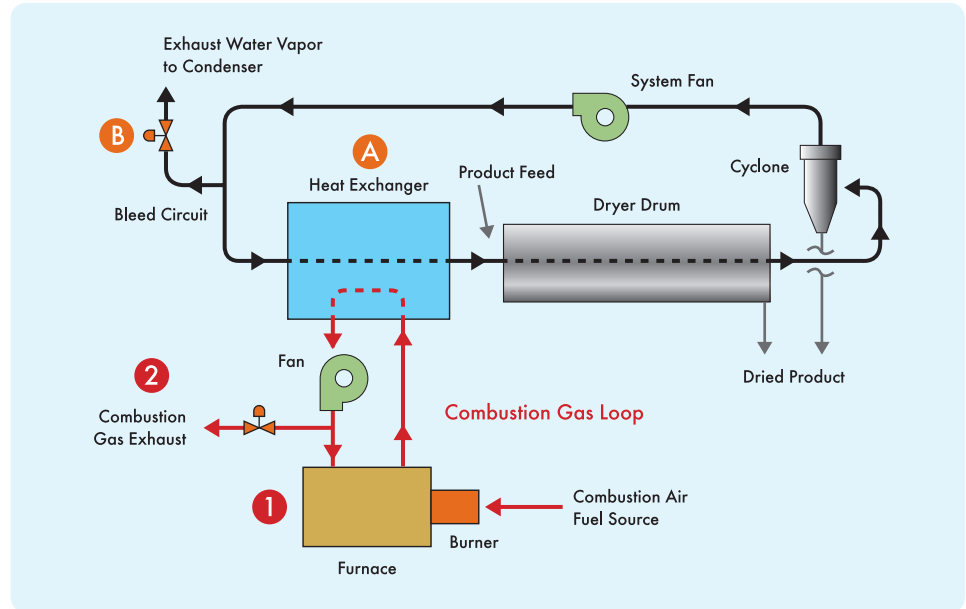
Munters (3) pass tubular heat exchanger design with removable cores

How it works

Please refer to illustration to right. The system fan creates a circulating loop of water vapor. Heat is transferred from the Munters heat exchanger (A) to drive the evaporation of moisture from wet feed in the dryer drum. The water evaporated from the feed displaces air in the water vapor loop, creating the "airless" environment. To maintain atmospheric pressure in the dryer, a bleed circuit (B) is needed to exhaust water vapor. This water vapor can be treated with a conventional condensing system or used as a heat source for other processes.

Combustion gases from a conventional furnace (1) supply heat to the Munters heat exchanger. The combustion gases are circulated several times through the heat exchanger for maximum efficiency before being exhausted into the atmosphere (2).

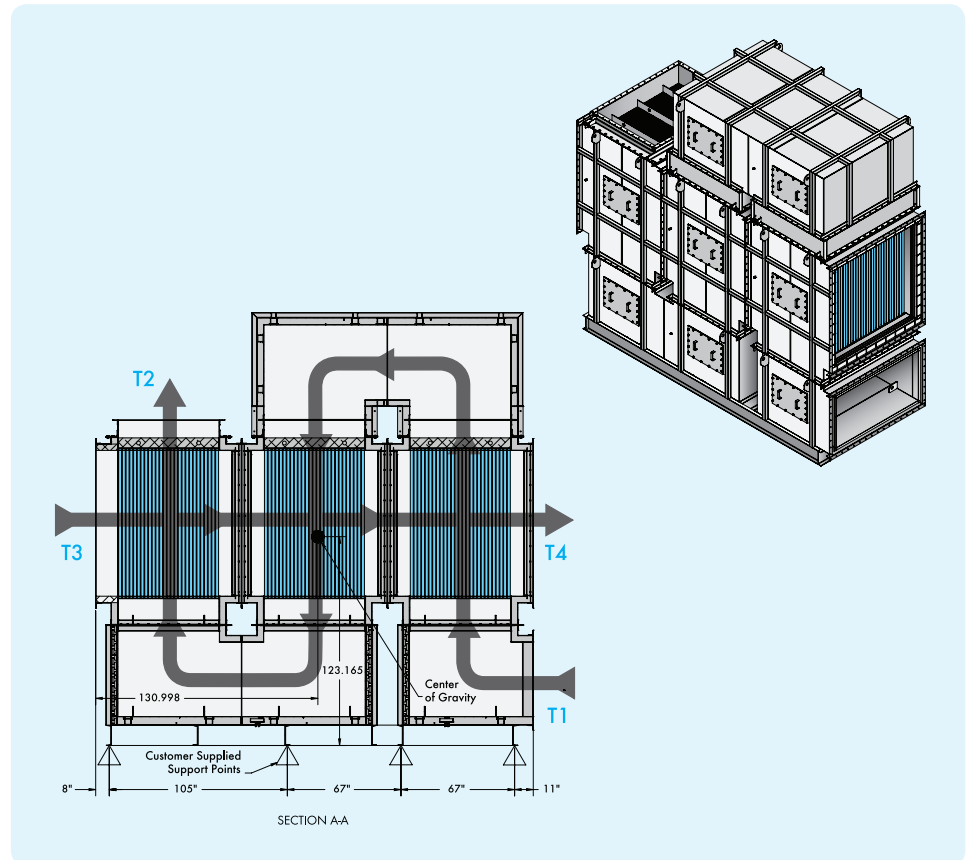
Superheated Water Vapor Loop



Greater efficiency with lower environmental impact

- The Dupps airless dryer offers the highest thermal efficiency of any dryer commonly used in the fishmeal industry; up to 20% fewer BTUs per pound of water evaporated using the Munters heat exchanger.
- Dryer exhaust is essentially water vapor, which can be used as a superior heat source elsewhere in the plant. Emissions are dramatically reduced and there is no visible exhaust plume.
- The airless design requires much smaller odor control and scrubbing system capacity.

Munters (3) pass tubular heat exchanger with removable cores



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