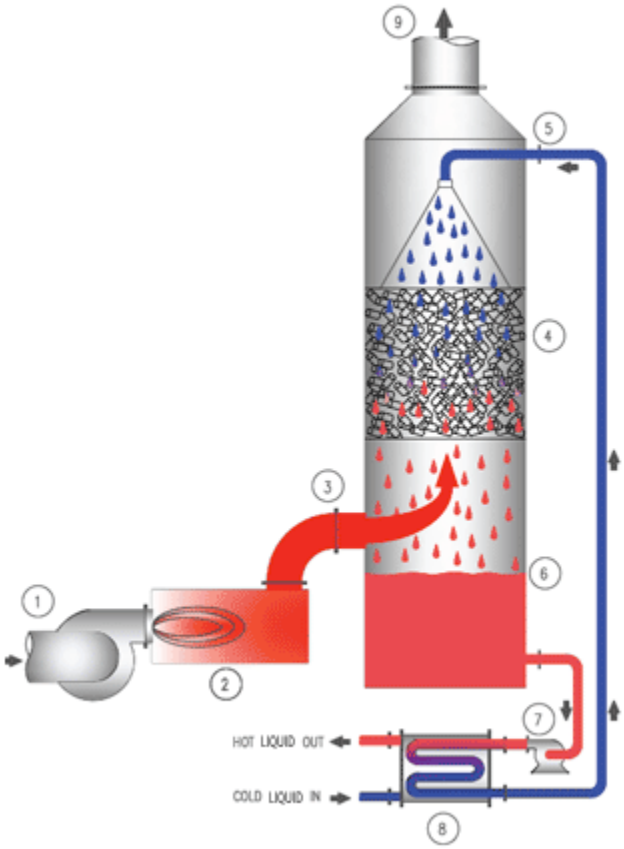
QSense™ Waste Heat Recovery Systems

Overview:
Efficiently recover valuable waste heat BTU's from hot gases to heat water or other liquids the direct contact way with a QSense™ Heat Exchanger. An optimal solution to reduce energy consumption and save on expensive fuel costs, while at the same time cleaning the flue gas contaminants and reducing the exhaust temperature.
This highly efficient counter current flow exchanger can be used for process heating applications or to meet or supplement building space heating needs. Almost any hot waste flue gas source can be used originating from process or power sources including boilers, kilns, ovens, dryers, thermal oxidizers and incinerators.
The QSense™ Heat Exchanger is offered in a vertical configuration for maximum space savings and with all necessary system components for complete one source responsibility.
For flue gases containing acid contaminants the unit can be equipped with neutralizing chemical reagents.

For particulate laden gas streams, a pre-scrubber and clog resistant contactor is available.

How it Works:
Air supplied by a blower **(1)** is raised in temperature by the heat source **(2)**. The hot gas enters the direct contact exchanger inlet **(3)** and travels upward through a high efficiency packed bed **(4)** with over 30 sq. ft./cu. ft. of active heat transfer surface area. Cool water is introduced at the top of the unit through a liquid distributor **(5)** where it comes into intimate counter current contact with the hot gas in the packed bed as it travels downward. Sensible heat transfer between the colder water and hot gas occurs resulting in rapid heat up of the water. The heated water drains into the sump section **(6)** and is pumped **(7)** through a plate and frame or shell and tube heat exchanger **(8)** to reheat return heat transfer liquid in a complete closed loop cycle. Cleaned reduced temperature gas now saturated with water vapor exits out of the top of the unit **(9)**.



Available Materials of Construction:

- Shell and internal components are offered standard in 304L stainless steel construction.
- 316L stainless steel optional.

Capacity Size Range:

- Heated liquid rates from 5 through 1500 gpm depending on gas volume and saturation temperature within a 2 degree approach.

Typical Applications and Uses:

- Pre-heat boiler feed water
- Heat up of process liquids
- Pasteurization
- Space heating of Buildings
- Reduction of acid gases including CO2

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