

## Heat Exchangers

- Steam heat exchangers
  - Mainly used for heating up process air, with steam as the medium, inside of the finned-tubes.
  - Big steam heaters, e.g. main steam air heaters that are used in the spray drying process for heating up the air for the drying chamber and can be equipped with a condensate cooling system. This system uses the flash-steam and the condensate of the used steam, for pre-heating the air before heating it up with the steam heater coils. The benefit of this solution is to use the energy of the flash-steam and the condensate for pre heating the air. Additionally, this system ensures that no steam – only water – returns to the condensate line. This prevents steam and condensate hammers in the condensate line.
  
- Water heat exchangers
  - Used for cooling or heating of process air.
  - Heat exchangers, with water as the medium, inside of the finned-tubes can be easily regulated. A large range of different capacities can be handled with only one heat exchanger coil.
  
- Oil heat exchangers
  - Mainly used for further heating up of process air, for example after heating with a steam air heater.
  
- Dehumidifiers
  - Ice water coolers are used for cooling down gases to below the dew point. The moisture inside of the gas will then start to condensate – the air will be dehumidified. After the cooling coil, a droplet separator is installed. After the droplet separator, the air is reheated to avoid having wet conditions after the dehumidifier unit.

## Air handling units

- Air intake units
  - Used to pre-heat the incoming air (winter coil) to avoid freezing of the filters during wintertime. These units are also equipped with filters for pre-filtration, as well as with a fan and noise absorbers.
- Combined heat exchanger and filter units
  - In most processes, gas is heated or cooled, and either directly before or after the heat-exchanging coil, a filter is installed. To avoid having a separate heat exchanger coil, which is connected over air connection pieces with a separate filter box, we are able to supply combined units. These units include heat exchanger coils and filter elements in the same casing and can also be equipped with air connection pieces welded onto the inlet and outlet of the unit.

## Energy recovery

We are able to supply complete energy recuperation systems incl. pumping stations: finned-tube heat exchangers on the clean inlet side of the process, combined with pillow-plate heat exchangers on the polluted exhaust side of the process. This means you have just one supplier taking care of the whole recuperation system.

## General information about our finned-tube heat exchanger design

- Design of casing
  - Design 1: insulated casing with easily extractable heat exchanger coils. Insulation is embedded in between two gas-tight welded metal sheet plates. Elements can be easily extracted for cleaning and inspection.
  - Design 2: heat exchanger elements gas-tight welded into an uninsulated casing. Casing is not insulated and heat exchanger elements are not easily extracted. This design is more cost efficient and is usually used on non-critical heat exchanger coils, which do not regularly need to be cleaned or inspected.