



TEAM UP FOR ENERGY SAVINGS

Waste-Heat Recovery

Saving the environment and saving money can be as easy as re-using hot exhaust air. That means you're on the front line for energy-savings opportunities. Team up with co-workers to spot ways to recover waste heat – it's good for the environment and good for your bottom line.

Uncover energy savings

Check out your waste-heat recovery. Proper maintenance will save energy by capturing and re-using rejected heat, instead of buying more energy. To conserve energy and cut costs, consider three main areas:

1. Housekeeping

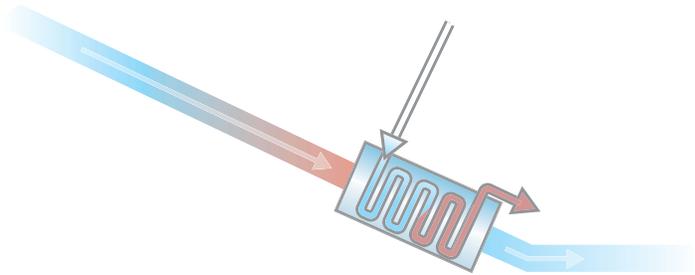
- › Identify sources of waste heat.
- › Eliminate as many sources of waste heat as possible.
- › Reduce the temperature of the remaining waste heat.
- › Inspect and maintain equipment to minimize the production of waste heat.

2. Low-cost opportunities

- › Capture waste heat from a clean waste stream that normally goes into the atmosphere or down the drain, and then pipe the waste stream to where it can be used.
- › Use waste-process water as a heat source for a heat pump.
- › Use the heat of the plant effluent being treated in a wastewater treatment plant as a heat source for a heat pump.
- › Re-use hot exhaust air for drying.
- › Install automatic controls.
- › Re-use heat from cooling hydraulic oil (e.g. within moulding machines and the injection moulds themselves). This also reduces the electrical load on the production process.

3. Retrofits

- › Install waste-heat reclamation equipment (e.g. replace a cooling tower circulation loop with a shell-and-tube heat exchanger).
- › Upgrade or replace outdated waste-heat reclamation equipment.
- › Combine a flue gas heat recuperator with a heat pump.
- › Use an absorption heat transformer, which reclaims waste heat by using a solution of lithium bromide.
- › Use a low-grade chiller, which can convert low-grade heat to spare cooling.
- › Integrate a compact heat exchanger with other processes.
- › In a large computer centre, capture generated heat by using thermal storage.
- › Recover heat generated through refrigeration and upgrade the heat by using a heat pump.
- › Consider converting high-temperature flue gas heat (e.g. from metallurgical furnaces) into superheated steam for electric power generation.



Evaluate the potential for your waste-heat recovery

1. Is your furnace or boiler fitted with an economizer or air heater to capture waste heat from the flue gases?

- Yes At the next shutdown, make sure the unit is operating efficiently; check fins and tubes for damage, especially from corrosion; and remove accumulated soot.
- No Install heat-recovery equipment or an economizer.

Done by: _____

Date: _____

2. Does your heating, ventilation and air-conditioning (HVAC) system exhaust a lot of air at room temperature or higher?

- Yes Install a heat-recovery system to preheat and pre-cool make-up air.
- No No action required.

Done by: _____

Date: _____

3. Can a ground-source heat pump be used to condense refrigerant, instead of using cooling-tower water?

- Yes Hire an engineering consultant to evaluate the use of a ground-source heat pump.
- No No action required.

Done by: _____

Date: _____

4. Can exhaust fan air be ducted directly into another area for space heating?

- Yes Install ducts and a blower to move air into the area to be heated.
- No Preheat make-up air or recover heat with an air-to-air heat exchanger.

Done by: _____

Date: _____

5. Is any process water warmer than 38°C when it leaves your facility?

- Yes Install a heat exchanger to recover heat for use in process or space heating.
- No If the wastewater flow is large enough, a heat pump or an absorption heat transformer may be a good idea – consult an engineer.

Done by: _____

Date: _____

6. Is any cooling process water dumped down the drain?

- Yes Use the warm water directly in another process. Or use a heat exchanger to recover heat for another process.
- No If cooling water is sent to a cooling tower, replace the cooling tower with a heat exchanger to recover heat from the water for other processes.

Done by: _____

Date: _____

7. Does any equipment exhaust a large amount of water vapour?

- Yes Use either mechanical or thermal vapour compression to upgrade the exhaust vapour into a more useful energy source.
- No No action required.

Done by: _____

Date: _____



Aussi disponible en français sous le titre : ENSEMBLE, ÉCONOMISONS L'ÉNERGIE! La récupération de la chaleur perdue

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