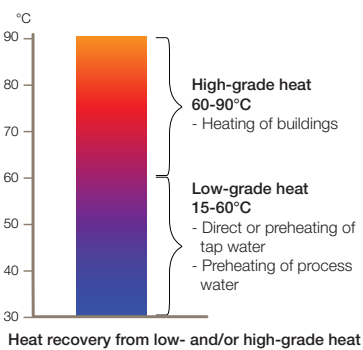


Heat recovery from open cooling tower

Global warming, climate change, carbon foot print is on everyone's agenda, how to be more efficient, more environmentally friendly and saving natural resources is the highest priority. Waste heat is waste energy, because heat is generated by energy obtained by burning natural resources such as fossil fuels, LPG, fuel oil and natural gas. By recovering waste heat, we not only protect the environment, but also save money and contribute to profitability of one's total operations.

Energy from waste heat can be recovered from different grades of temperature and transferred to other fluids which are required to be heated.

For example high grade heat can be hot water at 90°C, which can be used for heating buildings and low grade can be that from return cooling tower water, at 35°C at its peak, that can be used to preheat boiler feed water or process water.



Typical open cooling towers

Typically, open cooling towers are designed for peak hottest summer conditions and a ΔT of 6°C. This can be 35°C to 29°C at a dew point of 27°C. Whether or not 35°C return cooling tower water is valuable for recovering, can only be evaluated when compared to a plant using boiler feed water at ambient temperatures of 10°C or 20°C.

Manufacturing industries use heat for reactions, treatment and various processes after which, the unwanted waste heat is released to the atmosphere with an open cooling tower. Similarly, in **HVAC applications**, many people spaces need heat to be removed with the help of a chiller, which in turn releases the unwanted waste heat to an open cooling tower via the chiller's condenser.

Gasketed plate heat exchangers with counter-current flow are commonly used for heat recovery applications because of their excellent flow regime, making it possible to achieve a temperature approach of as low as 1°C. Hence for a cooling tower water return temperature of 35°C, boiler feed water can be preheated to as high as 34°C. However, for best economies of scale and optimum payback period, Alfa Laval recommends a 2°C approach, i.e. preheating to 33°C.

