



Introduction

Suat KILINÇ, General Manager of KILINÇ INDUSTRY gave an interview to Students of Gazi University about WHR (Waste Heat Recovery) systems, whose application number and application areas are increasing day by day.

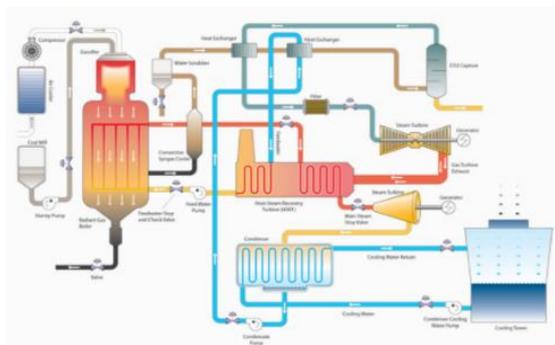
What is Industrial Waste Heat?

Many industrial plants implement drying, evaporation and melting processes on their production lines. During these applications, a high amount of heat energy is introduced to the production line. This heat used in the process is released into the water, environment and atmosphere after use. These types of heat are called Industrial Waste Heat.

Energy Recovery from Waste Heat

Our world is rapidly developing and industrializing. Many of the industrial plants spend energy to produce the heat required by their processes and this heat becomes inactive after their use. These gases emitted from the chimneys of the facilities to the atmosphere cause global warming and air pollution, accordingly, groundwater pollution and natural cover disappearing. Today, it is possible to collect these gases released into the atmosphere and produce electrical energy. As KILINÇ ENDÜSTRİ, we desire to design high technology and high efficiency WHR systems according to the capacity and process of the existing facility and to serve our customers.

While designing Waste Heat Recovery (WHR) Systems; technical values, content, water reserve capacity of the facility, geography and climate conditions of the facility are taken into consideration. KILINÇ ENDÜSTRİ design engineers conduct system analysis taking into account all data and offer the technological solution to obtain maximum efficiency. Technologies used in this system are divided into two as Steam Cycle and Organic Rankine Cycle (ORC).



Steam Cycle

The steam cycle is a thermodynamic cycle based on the Rankine Principle, where water is used as the working fluid. In order for this cycle to be efficient in industrial plants, steam should be produced at a temperature of $>260^{\circ}\text{C}$ and above. A Steam Cycle facility consists of Boiler, which converts waste heat energy into pressurized steam energy, Turbine which converts the obtained thermal power into mechanical energy, and Generator which converts the generated mechanical energy into electrical energy. The system fed by pumps performs steam cycle in a closed loop.

Organic Rankine Cycle Systems

This system, which is used as an alternative to the steam cycle, provides high efficiency electricity production in the turbine system of the organic fluid heated by convection with a high thermal transfer coefficient thermal oil or direct waste gas. This system, which can be used in all plants with continuous waste heat release, is preferred especially at low temperatures with its high efficiency. Organic rankine cycle (ORC) systems operate on a similar principle with traditional rankine systems. The heat energy recovered from the waste heat is transferred to the organic fluid circulating in the system. The system can provide a wide range of energy production from 200 Kw to 15 MW depending on the amount of waste heat energy.

