Industrial equipment, machinery, and systems release excess heat during operation.Many industrial activities also generate waste heat as a byproduct––an unused form of energy.[2]In this context, this research aims to provide an overview of the concept of waste heat in industrial facilities and to identify its main sources, as well as to review the most important engineering solutions and technologies used for its recovery, in order to improve energy efficiency and reduce thermal losses.Accordingly, the research problem can be formulated as follows: What are the engineering solutions available for waste heat recovery in industrial systems, and how do their operating mechanisms differ between direct heat exchange techniques and energy upgrading and conversion systems?Industrial waste heat refers specifically to the residual heat produced by processes such as manufacturing, power generation, chemical production, and refining.In this context, many industries––from massive steel mills to large power plants––are constantly seeking ways to improve energy efficiency.However, not all the input energy is effectively utilized, resulting in energy losses in the form of waste heat.Waste heat is the thermal energy remaining from industrial processes that is typically released into the environment.Waste heat recovery systems capture and reuse this residual heat instead of allowing it to dissipate.These processes often involve energy conversion or the use of heat to perform specific operations.One often–overlooked opportunity is waste heat recovery.[1].

lakhasly.com © تم تلخيص النص بواسطة موقع لخصلي