

Process design and integration of local energy systems

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A large amount of low grade energy is often wasted without heat recovery in the process industry. Heat integration for local energy systems can be used to utilize this waste heat and energy-efficiency can be improved with the systematic utilization.

In this work, a design methodology is used to evaluate the economic impact of integration of low grade heat with local energy system. This work develops a multi-period process integration method which characterizes change of heat load and electricity production in the local energy systems for different time of the day, seasons, etc. The method considers heat storage systems and part-load performance of the energy production equipment in local energy systems. The low grade heat is considered for integrating it with a large hospital complex in the case study, with which techno-economic impact of low grade heat recovery is evaluated.

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