

### Efficient energy integration of low grade heat for local energy systems

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Low grade heat in process industries is often wasted without full energy recovery or upgrading. Such wasted heat can be effectively utilized through heat integration of a industrial plant with local energy systems. In this work, a design methodology based on heat integration technique is applied to systematically evaluate potential for over-the-plant heat recovery and assess its techno-economic impacts of such integrated design. A multi-period design method has been developed to represent the discontinuous characteristics of heat load and electricity production in the local energy systems. The study also include the consideration of heat storage systems and part-load performance of the energy production equipment. A case study is used to demonstrate the applicability of design method developed and address the impact of waste heat recovery beyond the site with its economic feasibility.

Acknowledgement: This research was supported by the International Research & Development Program of the National Research Foundation of Korea (NRF) funded by the Ministry of Education, Science and Technology (No. 2011-0031290).