Total site targeting with stream specific minimum temperature difference

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Abstract

The paper deals with an extension of Total Site Integration to Locally Integrated Energy Sectors producing more realistic utility and heat recovery targets. Process Heat Integration (based on Pinch Analysis) aims to minimise the amount of energy mostly used in industrial processes. It is still an open question how to solve the Total Site targeting problem when different values for the minimum allowed temperature differences (ΔT_{min}) are specified for each process on the site. A single uniform ΔT_{min} for all processes integrated in a Total Site, as practiced to date, cannot be generally optimal. Such an assumption may be too simplifying and lead to inadequate results due to imprecise estimation of the overall Total Site heat recovery targets. The modified Total Site targeting procedure, proposed in this paper, allows obtaining more realistic heat recovery targets for Total Sites. It is illustrated with a case study for Locally Integrated Energy Sectors, also providing a comparison with the traditional targeting procedure and the advantages offered by the modified one.