Abstract

This paper presents a new technique to synthesis optimum heat integration networks between areas; the algorithm followed for heat recovery problems begins by establishing the minimum energy requirement. For a given network energy consumption, deficit cascades and zone problem table is used to evaluate the minimum number of heat exchanger units. Various network structures may be generated simultaneously to achieve the energy and range targeting.

The energy saving and area added are then calculated for different alternative distribution cascades with respect to MER also the number of inter-zonal transfer. The resulting networks are then subject to fuzzy analogical gates which consists of two analogical gates (symmetric and asymmetric). The symmetric gate (AND gate) inputs are normalized savings in energy requirement and the number of inter-zonal transfer. The asymmetric gate (Invoke gate) inputs
are the output of the AND gate and normalized added area. The proposed technique has been applied for the popular and well-known aromatic problem. The results of this case study show that the present strategy is excellent in decision making for the optimum area target and very good indicator to the optimum sequence for alternative distribution cascades compared to total network costs, also robust, accurate and time saver when there are a large number of alternatives possibilities.

References

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Fuzzy Analogical gates Technique for Heat Integration between Areas


Index Terms

Computer Science  Fuzzy Systems

Keywords

Energy Savings  Process synthesis  Heat Recovery  Heat Integration Networks  Area Integrity

Fuzzy analogue gates.