For a given heat exchanger network it is often necessary to determine the behavior of disturbances in the target temperature when inlet flow rate variations, and what is the ability or flexibility of the heat exchangers network to meet the design requirement at new operating conditions. This paper introduced a model to evaluate the disturbance propagation through a heat exchanger network without bypass, each exchanger in the network is represented by a set of algebraic equation with neglect high order differentiation terms. The model can be used to estimate the maximum deviation of system outputs when it experiences the worst combination of various types of disturbances, the model is developed for the analysis of controllability rather than flexibility, during the process design stage. The model is illustrated cause & effect relationship between the target temperatures and the disturbances in inlet temperatures and heat capacity flow rates. · The method has been tested for two problems reported in the literature.

References


Index Terms

Computer Science
Networks

Keywords

Heat exchanger networks, disturbance, flexibility, controllability.