



## The effect of condensation and evaporation pressure drop on specific heat transfer surface area and energy consumption in MED–TVC plants

R. Kouhikamali<sup>a,\*</sup>, A. Samami Kojidi<sup>a</sup>, M. Asgari<sup>b</sup>, F. Alamolhoda<sup>b</sup>

<sup>a</sup>Faculty of Engineering, University of Guilan, P.O. Box 3756, Rasht, Iran

Tel. +98 131 6690276; Fax: +98 131 6690271; email: kouhikamali@guilan.ac.ir

<sup>b</sup>School of Chemical Engineering, Faculty of Engineering, University of Tehran, Tehran, Iran

Received 26 June 2011; Accepted 6 March 2012

---

### ABSTRACT

The aim of this article is to investigate the pressure drop of condensation inside tubes and evaporation outside tubes inside the heat exchangers of multi-effect distillation with thermal vapor compression system. The important and effective factors that have an influence on the condensation and evaporation pressure drop are investigated in this article. Also, the influence of pressure drop along the vapor flow from one effect to another on energy consumption and required heat transfer surface area is investigated. The results show that, reduction in condensation and evaporation pressure drop decreases the energy consumption up to 6.6%. In addition, with the same energy consumption, the system that has less pressure drop requires a lower specific heat transfer surface area up to 8%.

*Keywords:* MED–TVC; Pressure drop; Energy consumption; Specific heat transfer surface area

---

---

\*Corresponding author.