

Numerical prediction of jet behavior of thermal vapor compressor

K.M. Yang^a, H.M. Lee^a, H.H. Jung^{b*}

^aGraduate School, Korea Maritime University, Busan, 606-791, Korea

^bDivision of Mechanical and Information Engineering, Korea Maritime University, Busan, 606-791, Korea
Tel. +82 (51) 410-4362; Fax +82 (51) 405-4790; email: junghh@hhu.ac.kr

Received 31 November 2010; Accepted in revised form 2 May 2011

ABSTRACT

In the present study, Fluent 6.3, CFD code was applied to study the jet behavior inside the thermal vapor compressor. The effects of back pressure on the entrainment ratios and the jet behavior were investigated. It was revealed that the effect of the back pressures was due to the air curtain effect of the primary jet. The entrainment rate was linearly dependent on the distance from the nozzle exit. The displacement effect by the boundary layer thickness could be considered to be negligible. The abrupt change in the wall static pressure at the mixing tube or the throat could be used as the criteria for well operation and well design.

Keywords: Numerical prediction; Thermal vapor compressor; Jet

* Corresponding author.