

**Effect of geometric and dynamic parameters on the two-phase flow distribution of R-22 through branch tube**

**Sang-Jin Tae\*, Keumnam Cho\*\***

\* Graduate student, School of Mechanical Eng., Sungkyunkwan University, Suwon, 440-746, KOREA

\*\* School of Mechanical Eng., Sungkyunkwan University, 300 Chunchun-dong, Changan-ku, Suwon, 440-746, KOREA; (fax)82-31-290-5849, ☎ 82-31-290-7445, E-Mail: keumnam@yurim.skku.ac.kr

**ABSTRACT**

The present study experimentally investigated the effect of geometric and dynamic parameters on the two-phase flow distribution of R-22 through branch tube. The key experimental parameters were the orientation of inlet and branch tubes (horizontal and vertical), diameter ratio of branch tube to inlet tube (1 and 0.61), inlet mass flux (200-500 kg/m<sup>2</sup>s) and inlet quality (0.1-0.4).

The flow distribution ratio decreased as the mass flux increased. The flow distribution ratio decreased by 12-25% as the tube diameter ratio decreased from 1 to 0.61, and decreased by 38-47% as the orientation of branch changed from horizontal to vertical upward for horizontal inlet tubes. As the orientation of inlet tube changed from horizontal to vertical upward for horizontal branch, the flow distribution ratio increased by 15-68%, but the quality in the branch tube decreased by 28-92% due to phase separation.