

Ingersoll R Compressor Ssr 2000 Manual

The effect of pipe diameter on horizontal annular flow is examined. Measurements of the local film height, the local droplet flux, the local velocity, and the entrained fraction for annular flow in a 9.53 cm horizontal pipe have been obtained. The measurements are compared with the results from previous investigators for horizontal annular flow in pipes with diameters of 2.54 cm and 5.08 cm. A new large scale two-phase flow facility has been designed and constructed. The facility has the ability to incline a 26.5 m pipe at angles between positive and minus 2.5 degrees from the horizontal. Local film height measurements show that the film distribution becomes increasingly asymmetric with increasing pipe diameter. The effect of pipe diameter on the asymmetries of the liquid film distribution is predicted approximately by a Froude number. At Froude numbers below 50, the liquid is stratified as a pool at the pipe bottom. A turbulent diffusion model developed by a co-researcher for the droplet concentration distribution is in good agreement with measurements at low gas velocities and low droplet concentrations. At higher droplet concentrations, velocity measurements suggest the existence of a secondary flow in the gas which inhibits droplet settling. Entrainment correlations developed from experiments in small diameter pipes, over predict the entrained fraction in large diameter pipes. A generalized entrainment correlation based on an equilibrium rate balance between the rate of atomization of droplets from the liquid film and the rate of deposition of droplets back to the liquid film is developed. The correlation is easily interpreted for two extremes of the liquid film distribution. When the film is distributed uniformly around the pipe wall, the entrainment relation reduces to a form developed by previous researchers. For conditions where the liquid film is stratified as a pool at the pipe bottom, a new entrainment relation is developed which is in good agreement with the results.

Construction in Southern Africa

Effect of Pipe Diameter on Horizontal Annular Two-phase Flow

Marine Engineering/log

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Flow Regime Transitions in Horizontal Gas-liquid Flow

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Effect of Pipe Diameter and Liquid Viscosity on Horizontal Stratified Flow

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