

## Rotary Entrainment in Two Phase Stratified Gas-Liquid Layers: An Experimental Study

**Authors :** Yagya Sharma, Basanta K. Rana, Arup K. Das

**Abstract :** Rotary entrainment is a phenomenon in which the interfaces of two immiscible fluids are subjected to external flux in the form of rotation. Present work reports the experimental study on rotary motion of a horizontal cylinder between the interface of air and water to observe the penetration of gas inside the liquid. Experiments have been performed to establish entrainment of air mass in water alongside the cylindrical surface. The movement of tracer and seeded particles have been tracked to calculate the speed and path of the entrained air inside water. Simplified particle image velocimetry technique has been used to trace the movement of particles/tracers at the moment they are injected inside the entrainment zone and suspended beads have been used to replicate the particle movement with respect to time in order to determine the flow dynamics of the fluid along the cylinder. Present paper establishes a thorough experimental analysis of the rotary entrainment phenomenon between air and water keeping in interest the extent to which we can intermix the two and also to study its entrainment trajectories.

**Keywords :** entrainment, gas-liquid flow, particle image velocimetry, stratified layer mixing

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