MODELING MIXED FLOW REGIMES AND REGIME TRANSITIONS IN GAS-LIQUID SYSTEMS

L. Srinivasa MOHAN[*]

ANSYS India

*Corresponding author, E-mail address: Mohan.Srinivasa@ansys.com

ABSTRACT

Gas-liquid flows in the oil and gas industries, and nuclear industries often involve transient flow patterns, such as bubbly, slug and annular flow. These flows are often associated with the existence of more than one flow topology, such as droplet, bubbly and separated flows. Mixed flow regimes such as these are more pronounced when the flow path involves bends, junctions and inclines. These flows can often involve regime transitions as well. The ability to predict these flows reliably is crucial for flow assurance and nuclear safety. In this talk we will introduce CFD based multiphase models that have the potential for describing such mixed flow regimes, as well as the ability to predict regime transitions. We will showcase the efficacy of such models by comparing predictions with experiments.

L. Srinivasa Mohan is a Principal Technology Specialist at ANSYS India. A Chemical Engineer by profession, he has 17 years of experience in modeling multiphase flows. His doctoral thesis at the Indian Institute of Science, Bangalore India relates to the modeling particulate flows in bins and hoppers. During his work at ANSYS he has advised customers in all aspects of multiphase flow modeling, including fluidized beds, bubble columns, flow assurance, distillation columns and many other processes involving multiphase flows.