

# **Study of the droplet-wire system by using a VOF technique**

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## **ABSTRACT**

Gas purification is generally carried on in a scrubber. In this equipment, the gas with condensate goes through an inlet vane, a mesh pad and cyclones in order to eliminate all condensate liquid droplets.

Mesh pad are used with the aim of producing the collision of small droplet into the wire of the mesh and to agglomerate small droplets together. Below the flooding point of the mesh the larger droplets formed by agglomeration are not carried off with the gas and are drained at the bottom of the mesh by gravity. If the mesh is operated above flooding then a substantial amount of larger agglomerated droplets are entrained at the top of mesh. These droplets are then separated from the gas stream in the following demisting device such as axial flow cyclone.

In order to understand how the interaction is taking place, a simple experimental setup has been developed. Droplets are falling due to gravity and interact with a single wire as well as with an ideal mesh. From the interaction it could be concluded when a droplet will break, or when the breakage does not take place since the surface tension forces the coalescing of droplets again.

A CFD model, using volume of fluid (VOF), was simulated with Fluent. The CFD simulation will allow a corroboration of the experimental results as well as a predictive tool for different scenarios.