

Experimental investigation of liquid distribution in a packed column under offshore conditions using Electrical Resistance Tomography (ERT)

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The design of topside in FPSO including acid gas removal unit (AGRU) has been considered significant as stranded gas has been developed in the world. The challenge of column design in FPSO is offshore conditions such as permanent tilt and dynamic motions which influence on liquid distribution in a packed column and further on their performances. In order to study the effect of offshore conditions on column performances, firstly, the fundamental behavior of liquid and gas in a packed column should be understood. Therefore, we observed liquid distribution in a packed column under offshore conditions using electrical resistance tomography (ERT). It is an invasive measurement technique without any interference to the internal flow of fluids. As offshore conditions, permanent tilt and roll motions are selected because of their severity compared to other motions. Using brine pulse, the liquid velocity distribution could be obtained from ERT conductivity data. We used cross-correlation technique to obtain the liquid velocity distribution in a column. The effects of height and offshore conditions on liquid distribution are analyzed to enhance the understanding regarding to the behaviors of fluids in a packed column.