Figure S1 Structure of the ring orifice distributor
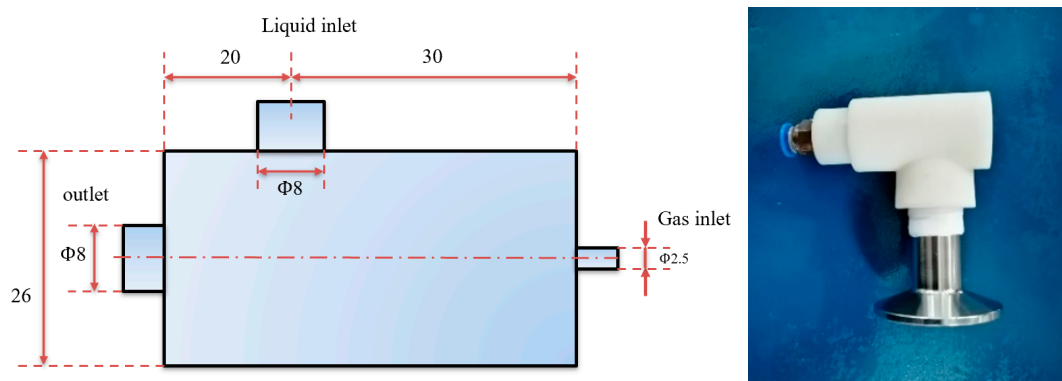

Figure S2 Structure of the jet nozzle
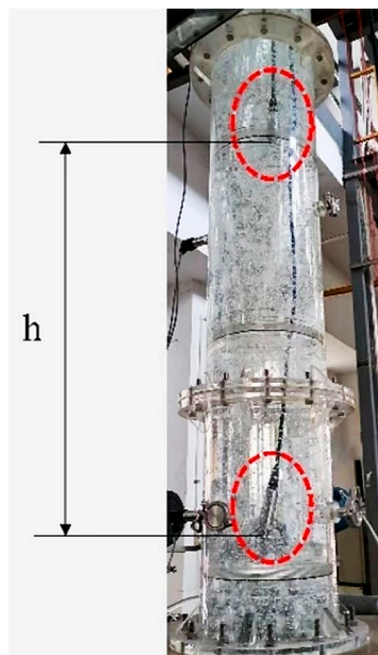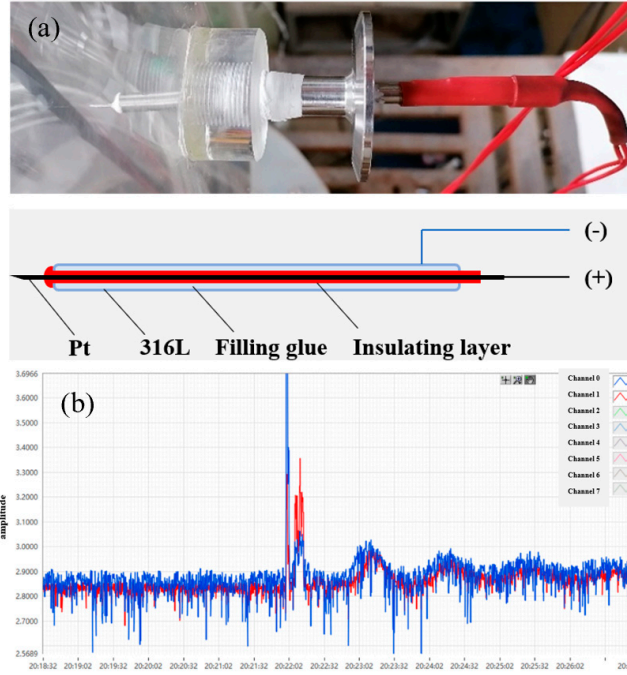

Figure S3 Immersed pressure sensors

Figure S4 (a) Schematic diagram of the structure of the conductivity probe; (b) Potential

signal acquisition interface of measurement resistance
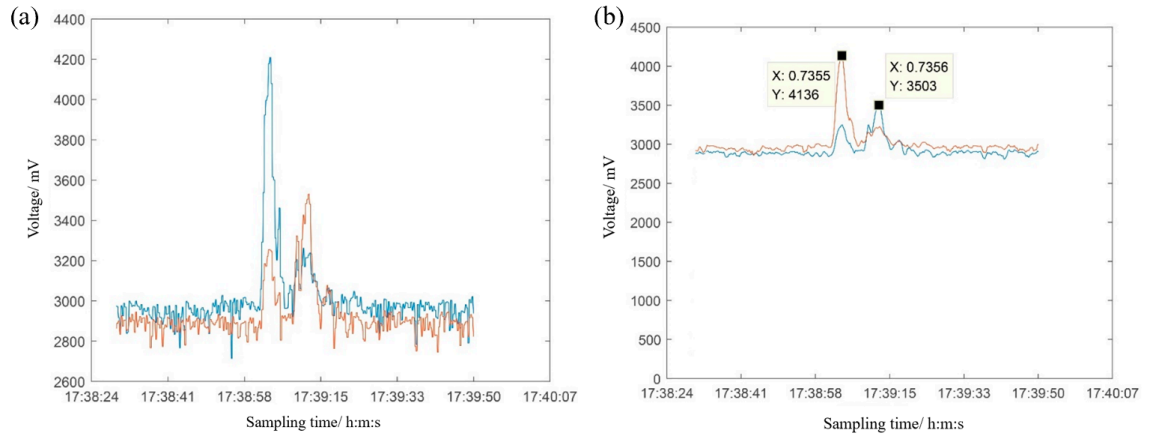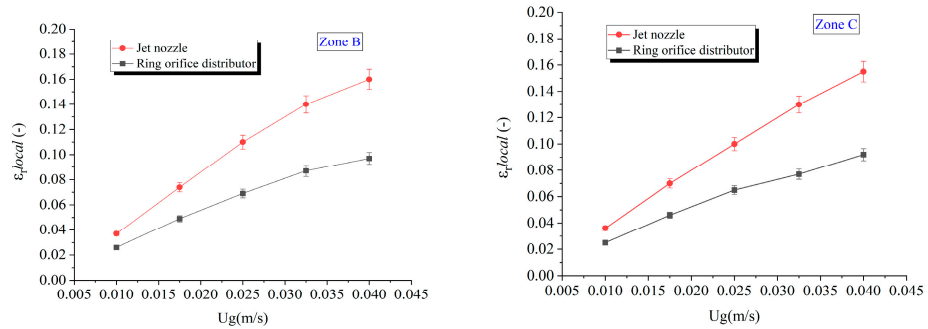

Figure S5 (a) Originally acquired signal curves of the conductivity probes; (b) Moving-average-filtered signal curves
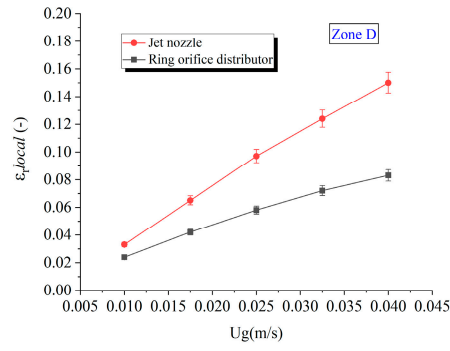
Figure S6 Relationships between the local gas holdup ε_{rlocal} and superficial gas velocities Ug in areas B~D of the riser
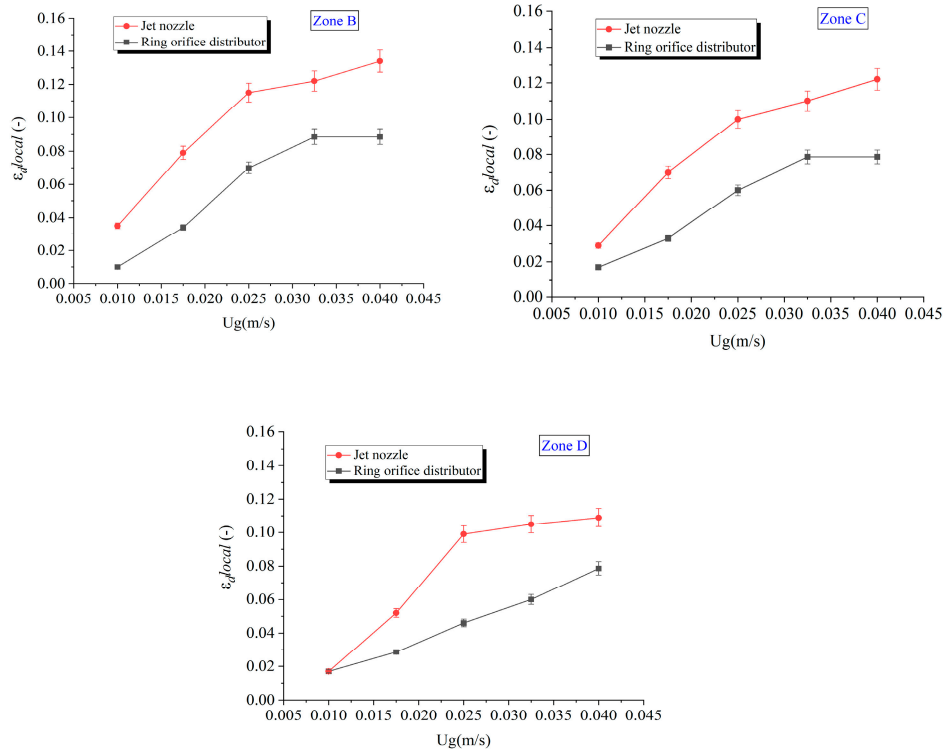

Figure S7 Relationships between the local gas holdup ε_{dlocal} and superficial gas velocities U_g in areas B~D of the downcomer