

Mixing Dynamics Across a Stratified Interface (CSP-5)



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Scientific Achievement:

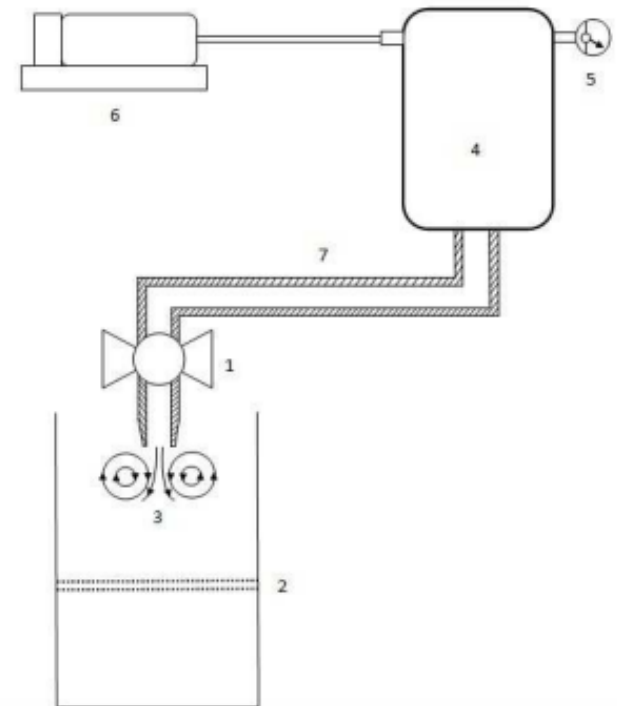
This work re-examines the underlying physical processes and the factors controlling the interface mixing dynamics across a stratified interface.

Significance and Impact:

Fluid structure's interaction with regions of sharp density gradients are prevalent in nature and in many engineering applications.

Research Details:

- Experiments were conducted to investigate the evolution of counter-rotating vortices in stratified and unstratified tanks.
- In the present work, laboratory experiments are performed using a water-brine water mixture.
- Vortices were created by adding a small slug of fluid from the top plane into the system.
- The resulting mixing dynamics in thin and thick interface were analyzed.
- Physical experiments were conducted to study the vortex interaction with the density interface.



Schematic of experimental setup:

- 1) valve, 2) density interface, 3) vortex pair, 4) pressure tank, 5) pressure gauge, 6) compressor, 7) pipe.

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