

수직 탭을 이용한 후향 계단 유동 제어

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Control of flow over a backward-facing step using vertical tabs

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Key Words: Backward-facing step(후향계단), Separation(박리), Reattachment(재부착), Mixing(혼합)

Abstract : In this study, mixing enhancement behind a backward-facing step is experimentally investigated using thin rectangular tabs attached on the trailing edge at the Reynolds number of 24,000 based on the free-stream velocity and step-height (h). The control parameters considered are the height and width of the tab and the spanwise spacing (λ) between the adjacent tabs. The reattachment length (x_R) is about $5.8h$ for uncontrolled flow. For each tab configuration, we measure the distributions of wall static pressure and reattachment length along the spanwise direction. With the tab, the reattachment length and wall static pressure show significant variations in the spanwise direction. With single tab, x_R slightly increases at the spanwise location of the tab, but significantly decreases at other spanwise locations. With multiple tabs, we also find that there exists optimal λ minimizing reattachment length. It is shown that the tabs attached on the trailing edge drastically increase mixing behind the backward-facing step.

농도분포에 따른 산업용 교반기 Impeller 설계에 관한 연구

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A Study about Concentration Distribution for Industrial Mixer's Impeller Design

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Key Words: Concentration(농도), Mixer(교반기), Impeller(날개)

Abstract : Industrial Mixers are used in various industrial fields where they are necessary to intimately mix two reactants in a short period of time. However, despite their widespread use, complex unsteady flow characteristics of industrial mixers are not systematically investigated. The present study aims for clarify unsteady flow characteristics induced by various impellers in a tank. Impellers are pitched blade turbine(PBT) types, Screw type and Rushton turbine type. In this study flow characteristics of the Impeller using distribution of concentration. The rotating speed of impellers fixed