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**Vertical Fence Wake Manipulation Using Periodic Variation of Upstream Flow** SEUNG-HWAN LEE, XIN CHENG TU, HYOUNG-WOO KIM, HYOUNG-BUM KIM, School of Mechanical Engineering, Gyeongsang National University, Korea — The effect of periodic variation of upstream flow on the separated shear flows behind the vertical fence was experimentally investigated. Upstream flow was modified using small obstacles and this device made the periodic change of streamwise velocities in front of the fence. The experiments were performed in a circulating water channel. The Reynolds number based on the height of fence and freestream velocity was varied from 2000 to 6000. The vertical fence was submerged in the turbulent boundary layer. Stereoscopic-PIV method was used to measure the instantaneous velocity fields around a vertical fence. 800 instantaneous velocity fields were acquired in each experimental condition and the mean properties were calculated using the ensemble average method. The obtained results were compared with those of uncontrolled fence flow. The results showed the vertical fence under the upstream flow change has the local downwash flow behind the fence and this flow suppressed the separation bubble and made the smaller recirculation region compared with uncontrolled fence wake.

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