

Observation of Instability and Visualization of Two Dimensional Supersonic Submerged Jet.

(수중 초음속 제트의 불안정성 관찰 및 가시화)

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The two dimensional supersonic submerged jets were investigated. The this study was to observe instability of supersonic submerged jet and to visu supersonic submerged jets. To observe the supersonic submerged jets, th tank and supersonic nozzle were needed. so the water tank and superson proper for this experiment, were manufactured through this study.

The performance of supersonic nozzle was confirmed from visualization o exit. The picture of nozzle exit plume showed the oblique shocks which formed at supersonic fluid only. The nozzle exit Mach number was calcula oblique shock angle formed at nozzle exit and the results was about 2.

The supersonic nozzle was connected to water tank and the nozzle exit water tank inside. So the nozzle exit supersonic jets were formed underwa supersonic submerged jet's spreading angle was measured by picture of h camera. The spreading angle increased with mass flow rate at over 0.025kg

The submerged jets' instabilities were observed by high-speed came sequential pictures of high-speed camera showed a characteristic phenomenon. This repetitive phenomenon was divided into four sequences four sequences regarded as a cycle. The occurrence frequency of this measured with changing mass flow rate, and the results were about 5-7 pe and outstanding trend was not detected.

This jets instabilities were important characteristics of supersonic submerged jets.