VISUALIZATION OF SUBMERGED CAVITATING JET BEHIND THE MICRO ORIFICE

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Other keywords: micro orifice, video data processing

ABSTRACT: Visualization of a cavitating jet in a fluid is a powerful tool for an analysis of cavitation effects on solid surfaces of mechanical parts of hydraulic components. Results of visualization of a cavitating jet behind submerged micro orifice are presented in this paper. Generally, it may be stated, that observed jet is highly non-stationary in a time domain. Its shape and structure is strictly dependent on a distance from the output of the micro orifice. Visualization method used in described experiments is based on an acquisition of digital images (video sequences) via high speed digital video camera. Minimum exposition time of the camera is in order of 10^0 microseconds, which is not satisfactory for purposes of cavitating micro jet visualization. Thus, a spark lamp light source was used during the experiments. This light source generates flashes with 10^1 ns duration. This illumination time allows us to remove motion blur from the images. The results of experiments presented in the paper were obtained at different hydraulic conditions of the jet (defined by a cavitation number) and different test apparatus configurations: light source parameters, high speed digital camera set up.

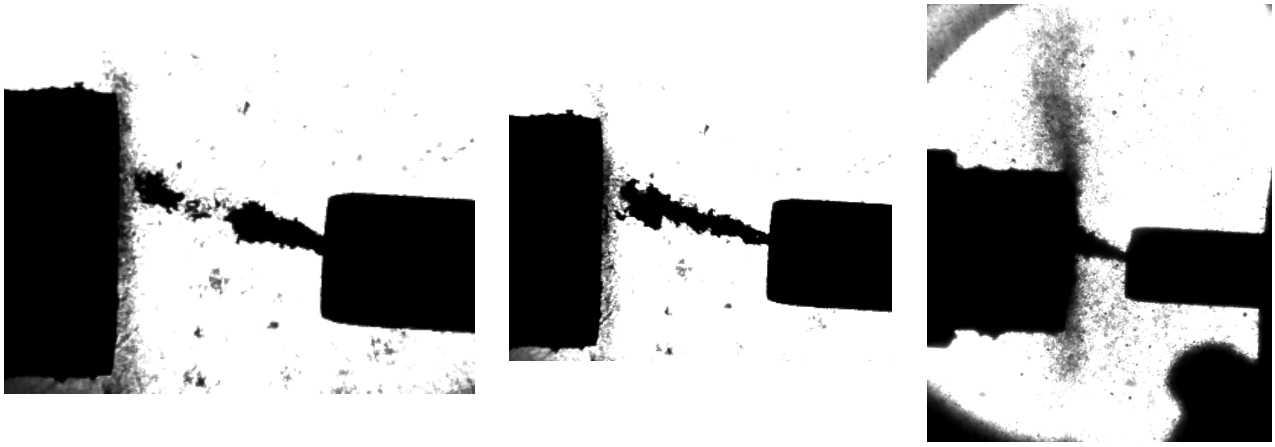

Fig. 1 Cavitating jet visualization behind the micro orifice. Image was acquired under different hydraulic conditions and different experimental apparatus setup

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