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Measurement of high-speed water column inside a Steam Injector using Dynamic PIV KOJI OKAMOTO, GEORGE KUWABARA, The University of Tokyo, SUNAO NARABAYASHI, Toshiba, MICHITSUGU MORI, Tokyo Electric Power Company — The Steam Injector is the superior system to pump the fluid without rotating machine. Because the water column is surrounded by the saturated steam, very high heat transfer is also expected with direct condensation. The inside of the Steam Injector is very complicated. To improve the efficiency of the Steam Injector, the water column behavior inside the Injector is visualized using the Dynamic PIV system. Dynamic PIV system consists of the high-speed camera and lasers. In this study, 384x180 pixel resolution with 30,000fps camera is used to visualize the flow. For the illumination CW green laser with 300mW is applied. To view inside the Injector, relay lens system is set at the Injector wall. Very high speed water column during the starting up of Steam Injector had been clearly visualized with 30,000fps. The wave velocity on the water column had been analyzed using PIV technique. The instability of the water column is also detected.

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