ABSTRACT

The paper describes an experimental investigation of two similar centrifugal pump impellers of low specific speed. Both impellers show rotating cavitation over a wide range of part load operating points. The occurrence of this phenomenon produces a characteristic shape of creeping head-drop compared to the more usual sudden head-drop at “normal” operation points. The onset of rotating cavitation can be assigned to a certain value of the parameter \( \sigma/2\alpha \) meaning the cavity volume in relation to the incidence angle. Optical analysis by video and high-speed camera techniques illustrates the development of this instability mechanism which is mainly driven by an interaction of the cavity closure region and the following blade. Combining these observations and the results of a fourier-transformation the characteristic propagation frequencies of rotating cavitation can be presented for one impeller.