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The Wake Analysis Behind a Foamed Cylinder AMIR KHASHECHI, Azad University of Tehran, RESEARCH CENTER OF AZAD UNIVERSITY OF TEHRAN TEAM — Particle Image Velocimetry (PIV) has been carried out to investigate the wake region behind a foamed and a finned cylinder. The purpose of this analysis is to develop one- and two- point correlations and to investigate the flow characteristics for these two cases. The experiments are conducted for two Reynolds numbers (based on the mean air velocity and the cylinder diameter) 2000 and 8000. The application of Proper Orthogonal Decomposition (POD) to the PIV velocity fields of the two cylinder types is also discussed. The POD computed for the measured velocity fields for both cases shows that the first two spatial modes contain most of the kinetic energy of the flow irrespective to the cylinder type. These two modes are also responsible for the large-scale coherence of the fluctuations. For foamed cylinder types, the first four eigenmodes of the velocity field were measured and their organizations were investigated. These eigenmodes disclose the overall mean flow structure, and the large- scale structure being essentially connected to the most robust flow motion.

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