입자농도가 Digital Holographic PTV 측정에 미치는 영향에 관한 연구

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Effect of Particle Concentration on Digital Holographic PTV Measurement

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Key Words: Digital Holographic PTV(디지털 홀로그래픽 입자추적유속계), Numerical Reconstruction(수치적 재구성), Particle Concentration(입자농도)

Abstract : The digital HPTV velocity field measurement consists of four steps: recording, numerical reconstruction, particle extraction and velocity extraction. In the velocity extraction process, we improved PTV algorithm to extract the displacement of particle each placed in 3D space. Because a digital recording device was used, some factors such as a spatial resolution, numerical aperture, and particle concentration can affect the performance of the digital HPTV. Especially, a particle concentration (C_o) affected the reconstruction efficiency in numerical reconstruction and particle extraction process. In this paper, the reconstruction efficiency was analyzed experimentally with different particle concentration. Optimal reconstruction efficiency was shown in the range of C_o=13~15 particles/mm^3.

다양한 Fiber를 이용한 Fluidic Muscle 실린더 개발

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Development of the Fluidic Muscle Cylinder using various fibers

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Key Words: Fluidic Muscle(인공근육), Fiber(섬유), Contraction Ratio(수축률), Finite Element Modelling(유한요소 모델링), Code Angle(코드 각)

Abstract : The fluidic muscle cylinder consists of an air bellows tube, flanges and lock nuts. It's features are softness of material and motion, simplicity of structure, low production cost and high power efficiency. In this study, we carried out the finite element modelling and analysis about the main design variables such as contraction ration and force, diameter increment of fluidic muscle cylinder. On the basis of finite element analysis, the prototype of fluidic muscle cylinder was manufactured and tested. Finally, we compared the results between the test with the finite element analysis using various fibers.