센서 동역학을 고려한 충격응답해석

류봉조[†](한밭대학교) · 안길영[*](LG산전) · 권병희[*] · 오일성[*] · 이규섭[**](통일중공업)

Analysis of Impact Responses Considering Sensor Dynamics

B. J. Ryu, K. Y. Ahn, B. H. Kwon, I. S. Oh and G. S. Lee

Key Words : Sensor Dynamics(센서 동역학), Impact Response(충격응답), Impact Force Model(충격력 모델)

Abstract : Impact is the most common type of dynamic loading conditions that give rise to impulsive forces and affects the vibrational characteristics of mechanical systems. Since the impact force and response are measured indirectly through the sensors, it is difficult to predict the impact force and acceleration. In this study, contact force model based on the Hertz law is proposed in order to predict the impact force correctly. To investigate the influence of the position of the sensor attached to the impacting bodies, the two kinds of sensors were used. Finally, importance of the consideration of sensor dynamics is verified by applying the above contact force model to the real magnetic contactor.

인공위성 태양전지판 전개 시스템 동적 모델링

허석[†](동국대학교 기계공학과 대학원) · 곽문규[*](동국대학교 기계공학과)
· 김홍배[**] · 문상무[**] · 우성현[**] · 이상설[**](한국항공우주연구원 우주시험연구그룹)

Dynamic Modeling of Satellite with Deployable Solar Arrays

Seok Heo, Moon K. Kwak
Hong B. Kim, Sang M. Moon, Sung H. Woo, Sang S. Lee

Key Words : Strain Energy Hinge, One dimensional nonlinear torsional spring, Lagrange's Eq.,
         Solar Array Deployment

Abstract : This research is concerned with dynamic modeling of satellite with deployable solar arrays equipped with strain energy hinges (SEH). It is found from experiments that the SEH has nonlinear dynamic characteristics and complex buckling behavior, which is difficult to explain theoretically. In this paper, we use an equivalent one dimensional nonlinear torsional spring for the SEH. Lagrangian equations of motion are used for the derivations.