

## 개선된 충격해머의 동역학적 모델

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### Improved dynamic model of the impact hammer

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**Key Words** : Modal testing, Impact hammer, Structural dynamics

**Abstract** : Although impact hammer is widely used as a convenient excitation tool in structural modal testing, little is known about the dynamic characteristics of its impulse mechanism. Transmission of the impulsive force to the structure depends on the dynamic properties of the impact hammer as well as the stiffness of the tip. An improved dynamic model of the impact hammer is proposed in this study with numerical simulations based on this model. Impulse duration and the condition of rebound are analysed. Experimental verification of the improved model is given for various cases. The test results show good agreement with the ones predicted by the improved model.

## 열린 균열이 있는 보의 효율적 모델링 방법

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### An Efficient Modeling Method for Open Cracked Beam Structures

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**Key Words** : Open Crack (열린 균열), Finite Element Method (유한요소법), Exact Dynamic Element Method (엄밀한 동적요소법), Crack Diagnosis (균열 진단).

**Abstract** : This paper presents an efficient modeling method for open cracked beam structures. An equivalent bending spring model is introduced to represent the structural weakening effect in the presence of open cracks. The proposed method adopts the exact dynamic element method (EDEM) to avoid the difficulty and numerical errors in association with re-meshing the structure. The proposed method is rigorously compared with a commercial finite element code. Experiments are also performed to validate the proposed modeling method. Finally, a diagnostic scheme for open cracked beam structures is proposed and demonstrated through a numerical example.