

INNOVATIVE VIBRATION CONTROL DEVICES USED IN BUILDINGS

ANIBRATA PAL

M. Tech Student, School of Civil Engineering, KIIT University, Bhubaneswar, Odisha, India

ABSTRACT

Vibration of structure due to earthquake, wind or rotating machines are very common and they are getting complicated nowadays. The impact of these vibrations accounts for loss of live and/or property. The aim of this paper is to study the different innovative devices such as semi active variable stiffness (SAVS), passive piezoelectric vibration shunt control technique, Shape memory alloy, Euler Spring isolator, Gospodnetic-Frisch-Fay beam and roll and cage(RNC) isolator developed recently to control the vibration of buildings. The paper illustrate with the applications, advantages, disadvantages and mechanical properties of these devices. SAVS is a beamlike device which alters its stiffness by using the variations of moment of inertia of an area as it rotates around a normal axis passing through its centroid. The Euler spring isolator is based on the post-buckling dynamic characteristics of the column. The Gospodnetic–Frisch-Fay beam, which is free to slide on two supports has restoring mechanism. Shape Memory alloy reduced the vibration based on the shape memory effect (SME) and pseudo elasticity associated with the thermal-induced or stress-induced reversible hysteretic phase. The roll-n-cage (RNC) isolator in corporate isolation, energy dissipation, buffer and inherent gravity-based restoring force mechanisms in a single unit.

KEYWORDS: Vibration Control, Semi Active Variable Stiffness (SAVS), Roll And Cage(RNC) Isolator, Shape Memory Alloy, Passive Piezoelectric Vibration Shunt Control Technique