In environment, unwanted and undamped vibrations are abundantly available which can be converted into electrical energy and used for energy harvesting. This paper contains the design, modeling and simulation results of MicroElectroMechanical System™s (MEMS) variable parallel plate capacitor which is used for stepping up the voltage and power harvesting using forced vibration. Basic design, electric circuit and simulation results for model with single cavity and model with two cavities of parallel plate variable capacitor are presented. This is first time, study of parallel plate with two cavities conducted. Forced vibration is used as activation force and dynamics of models are tested for different combination of forcing frequencies and amplitude of vibration. Performance of both models is analyzed by computing average current and power. Different trials are conducted by changing various input parameters.