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(54) Title: BROADBAND VIBRATIONAL ENERGY HARVESTING

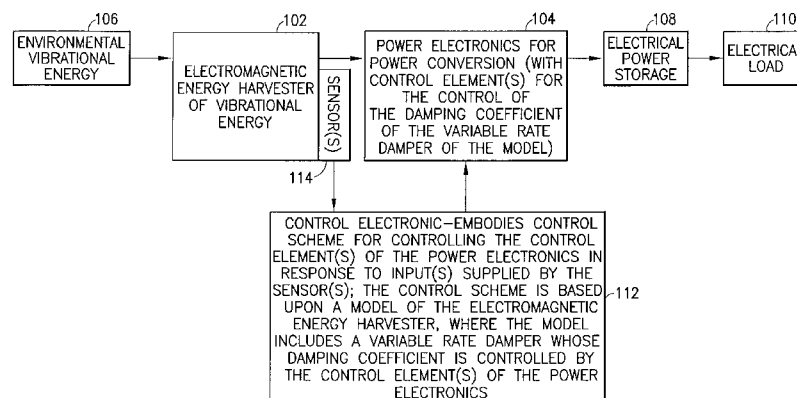


FIG.1

(57) Abstract: A system that converts environmental vibrational energy into electrical energy includes a transducer that undergoes oscillating movement in response to the vibrational energy in order to produce an oscillating electrical signal. Power electronics process the oscillating electrical signal. A control system (including at least one control element of the power electronics, at least one sensor and control electronics) carries out a control scheme that dynamically varies the dampening of the oscillating movement of the transducer over time. The control scheme is based upon a predetermined parametric relation involving a plurality of variables derived from the properties measured by the at least one sensor. In several embodiments, the plurality of variables includes a first variable representing excitation frequency of the transducer. In another embodiment, the predetermined parametric relation represents relative phase between two variables derived from the properties measured by the at least one sensor.



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