

Example of an outstanding review

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The paper explores an interesting new mechanism related to SSHI for peak-detection and switching. The mechanism is composed a circular track, a magnetic ball, and a pair of reed switches. Modelling and experimental validation are presented. Minor edits are required prior to recommendation for publishing.

Minor edits

(1) Abstract -> Should include a sentence describing the new mechanism, i.e. rotating magnetic ball and reed switch.

(2) P4 L25 "The circular track is engineered to allow the magnetic ball" AND
P6 L22 "owing to the synchronization design between the motions of the tip block and the magnetic ball," AND

P7 L57 "In the feasible zone, synchronization between the motions of the oscillator and the magnetic ball "-> How is the track engineered so that it's motion is 180degs out of phase with the beam tip displacement? In the 'feasible zone' the track path-length is tuned to the expected ball velocity and half/one times the operational frequency? Please add a sentence or two to explain.

(3) P4 L47 " At steady state, when the tip block reaches the maximum points, the magnetic ball should concurrently arrive at the polar positions, i.e., top or bottom of the circular track." AND for example
P5 L 39 "At this moment, the peak voltage is attained, and the magnetic ball should be designed to synchronously pass by the top of the circular track in the tip block, where a reed switch is installed. As the magnetic ball approaches the upper reed switch, the magnetic effect becomes sufficiently strong to turn on the reed switch." AND

P5 L52 "After the magnetic ball rolls away, the reed switch is turned off. "
-> Does the magnetic orientation of the ball magnet make a difference to the reed switching process? How is the polarity of the ball magnet controlled at the track polar positions? Does the reed switch itself modulate the orientation of the magnetic ball? Please add a sentence or two to explain.

(4) P10 L43 " Some trial-and-error tuning is needed to carefully choose the magnetic ball with an acceptable magnetic field strength, such that the switching action can be carried out on time once the voltage peaks are attained."-> Please give details of the magnetic ball/s used experimentally for the results shown in Figs 4 - 7. i.e. grade of bearing, magnetic field strength. Please also give details of the reed switches used.

(5) Figures 5,6,7 -> Are the powers plotted equal to the peak or average power?

(6) Throughout paper clearly define whether the powers discussed in the paper are peak or average, e.g. P10 L59 "maximum harvestd power from SEH is about 0.25 mW"

(7) P12 L20 ". The presence of the magnetic ball obviously alters the dynamic behavior of the whole system." -> Interesting, what does the presence of the ball do to the cantilever resonant peak? i.e. for Fig 7b, does the ball reduce mechanical quality and widen the resonance response?

(8) P12 L28 "presence of the magnetic ball introduces nonlinearity into the linear system." -> What sort of nonlinearity, softening or hardening? Fig 7b might suggest softening, however the 1 Hz steps are too large to fully understand?

Grammar and typographical

(9) P1 L32 "In this paper, rather than using the impact-engaged strategy in literature,"-> "In this paper, rather than using the impact-engaged strategy discussed in the literature"

(10) P2 L9" has attracted numerous research interest [1, 2, 3, 4]. " -> Re-write to correct grammar.

(11) P2 L12 " Energy harvesting circuit plays an important role" -> "The energy harvesting circuit used can play an important role"

(12) P2 L20 "several folds"-> "several fold"

(13) P2 L30 "biggest overshoot place"->"largest overshoot value"

(14) P2 L35 " The power factor has been improved and more close to the unity."-> Reference needed.

(15) P2 L39 "In the early study of SSHI, based on the fact that the piezoelectric voltage is basically proportional to the displacement of the piezoelectric structure, a displacement sensor was used for peak detection."-> Reference needed.

(16) P2 L53 "The ESP-SSHI scarifies some performance for carrying out the selfpowered function." -> scarifies?? Re-write sentence to enhance clarity.

(17) P3 L4 "New circuit designs kept emerging for restoring the improvement effect of the original SSHI against the scarification after its self-powered implementation" -> scarification?? Re-write sentence to enhance clarity.

(18) P3 L11 " the energy dissipation in the switching components can be eliminated;" -> What about frictional effects?

(19) P3 L18 "[17, 18, 19, 20]." -> "[17 - 20]." ?

(20) P3 L28 "and result in structural damages." -> "result in structural damage." Also, electric charge arcing during the structural collisions can damage the switching mechanism, cause oxidation/Carbonisation etc?

(21) P5 L 35 "hard collisions can be subtly avoided." -> subtly?? Re-write sentence to enhance clarity.

(22) P6 L13 "rectified dc" -> Define 'dc'.

(23) P9 L39 "reaches around its maximum" -> "reach around its maximum"

(24) P9 L51 "collisions of the magnetic ball to the circular track"->"collisions of the magnetic ball with the circular track"

(25) P10 L54 "800 kΩ." -> And elsewhere throughout manuscript, don't split number and units across lines, use hard space to connect.

(26) P10 L55 " the MSP-SSHI design could always produce larger" -> " the MSP-SSHI design always produces larger"

(27) P10 L57 "for at least 75%"-> "by at least 75%"

(28) P10 L59 "maximum harvestd power from SEH is about 0.25 mW" -> harvestd??

(29) P12 L48 "further move away from the resonant frequency"-> "moves further away from the resonant frequency"

(30) P12 L52 "; the synchronized switch action can hardly make effective improvement on the harvested power." -> "; the synchronized switch action cannot effectively improve the harvested power."