# Article information:

Dynamic modeling and experimental validation of a low frequency piezoelectric vibration energy harvester via secondary excitation of pressured fluid - ScienceDirect
<https://www.sciencedirect.com/science/article/pii/S0888327023000778>

# Article summary:

1. A low frequency piezoelectric energy harvester is proposed to scavenge low frequency vibration energy in ambient environments.

2. The harvester is characterized by an indirect vibration-to-electric energy converter via transferring the pressure energy of pressured liquid medium.

3. Experiments showed that the diameter of damping orifice, initial system backpressure and proof mass had strong influences on the resonance frequency and output voltage.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article “Dynamic modeling and experimental validation of a low frequency piezoelectric vibration energy harvester via secondary excitation of pressured fluid” provides a detailed overview of a novel structure for harvesting low-frequency high-intensity vibration energy from ambient environments. The article presents a comprehensive analysis of the proposed structure, including dynamic modeling, simulations, and experiments to prove its feasibility and performance. The authors provide evidence for their claims through experimentation, which lends credibility to their findings. However, there are some potential biases in the article that should be noted.

First, the authors focus primarily on the advantages of their proposed structure without exploring any potential drawbacks or risks associated with it. While they do mention that further research is needed to optimize the design parameters for different applications, they do not discuss any possible risks or limitations associated with using this type of harvester in real-world scenarios. Additionally, while they present evidence for their claims through experimentation, they do not explore any counterarguments or alternative perspectives on their findings.

Second, while the authors provide a detailed overview of their proposed structure and its performance characteristics, they do not discuss any other existing structures or approaches for harvesting low-frequency high-intensity vibration energy from ambient environments. This could lead readers to believe that this is the only viable approach when in fact there may be other options available as well.

Finally, while the authors present evidence for their claims through experimentation, they do not provide any data or figures to support these claims which could help readers better understand and evaluate their findings. Additionally, while they mention that further research is needed to optimize design parameters for different applications, they do not provide any specific recommendations on how this can be done which could limit readers’ ability to apply these findings in practice.

In conclusion, while this article provides a detailed overview of a novel structure for harvesting low-frequency high-intensity vibration energy from ambient environments and presents evidence for its performance characteristics through experimentation, there are some potential biases that should be noted such as lack of exploration into potential drawbacks or risks associated with using this type of harvester in real-world scenarios; lack of discussion about other existing structures or approaches; lack of data/figures to support claims; and lack of specific recommendations on how design parameters can be optimized for different applications.

# Topics for further research:

* Potential drawbacks of vibration energy harvesters
* Alternative approaches to harvesting low-frequency vibration energy
* Optimizing design parameters for vibration energy harvesters
* Real-world applications of vibration energy harvesters
* Data and figures for vibration energy harvesters
* Risk assessment of vibration energy harvesters

# Report location:

<https://www.fullpicture.app/item/063ca21ae9410ed61ae932df801eba70>