

What are piezoelectrics? And how does it work?

While seeking other solutions to this problem, investigators, specifically from NASA (4), they inferred that the development of light energy harvester devices with outputs of high power and low cost was essential. It was obtained information of piezoelectric material sensors, which were a way to collect through vibrations generated by air vehicles. In previous investigations, they had nano-generators of simple layers of MoS₂, that resisted high tensions, and at the same time were light, but they believed it could be obtained more efficiency, idea where they were right, and it was proposed the idea of a piezoelectric energy producer that was light and highly effective with the same materials.

With investigations previously done by the team, and these bases of the main problems and partial solutions by NASA (5), it was chosen to go deeper and implement a new generation energy more efficient, grounded in a Ph.D dissertation, it was obtained information of piezoelectric energy harvester, being these ideal due to their performance, which is good in small quantities while moving.

It was reached to the idea of using piezoelectric technology, due to the environment generated during the flight, there is mechanical vibrations, this technology can operate with a great quantity inside the aircraft, in non busy area like the parts beneath the seat, services doors, generating that way, and besides reducing wiring in considerable amount.

Piezoelectrics are minerals that generate energy when they deform. The materials of this are regularly no effective if they don't produce electricity, but using these manufactured components specially for this method, they could be implement in a lot of parts of the aircraft.

This components are capable to generate energy for another components with only vibrations caused by minimum air currents or accelerations from 0.05 G to 0.3 G [6]. For this reason this will be implemented in parts of the aircraft where vibrations are bigger like seats or wings. This components have a very low price, so price ain't a problem. Also, manufacturing them is really simple, if any problem or failure is presented replacing them is a very viable option.