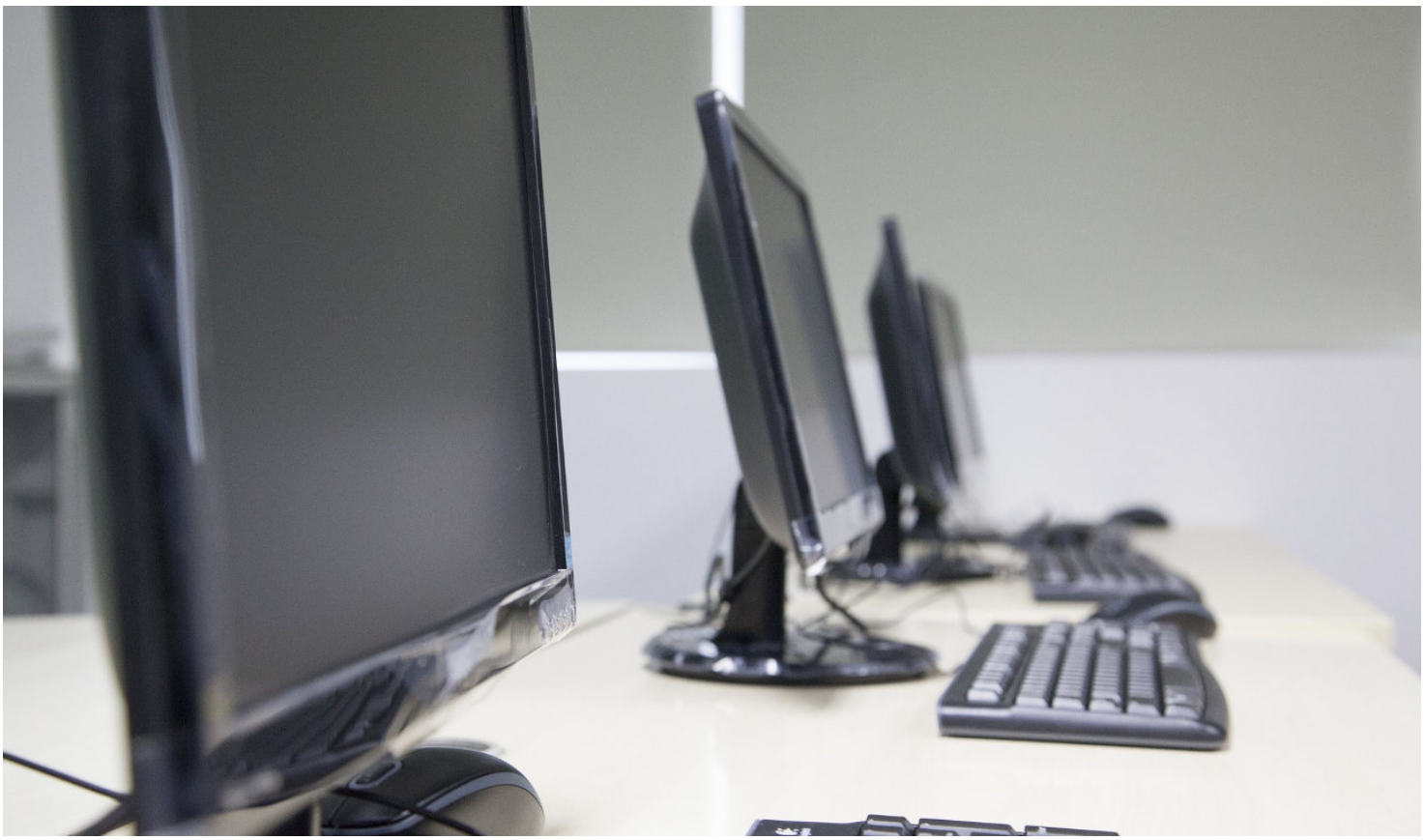

Thin film technology | Photo source Pixabay

THIN FILM SYSTEM CONVERTS HEAT FROM ELECTRONICS INTO ENERGY

TELECOMMUNICATIONS

Engineers have developed a thin film technology that could use heat waste from everyday objects as energy.

Creating energy from an external and sometimes unexpected source can help power operations like never before. An electrified road that charges electric cars and the creation of a bio-fuel from mushroom waste represent different approaches. Now, engineers at the University of California, have formed a system that captures energy commonly lost from everyday objects. Almost 70 percent of energy the US produces every year is waste heat. Cars, computers, and industrial sites are some of the things that emit this heat. Applying the new thin film system to such sources can prevent wasted heat and produce energy.

The innovation works by using pyroelectric energy conversion. This process turns heat into energy in a solid state with no moving parts. This technique is suitable for utilising waste-heat energy supplies that are below 100 degrees Celsius. The research team synthesized thin film versions of materials that measured just 50-100 nanometres thick. Pyroelectric-device structures were than tested based on these films. These structures allow the engineers to measure both the temperature and electrical currents created. They could then source heat to test the device's power generation capabilities.

The results of the engineers' research suggest that the nanoscopic thin film technology is ideal for this application. It found that it was particularly effective for installing on and harvesting waste heat from high-speed electronics. Additionally, it has the potential to be efficient in a number of other

applications. The study found that the thin film could turn waste heat into usable energy for fluctuating heat sources. This was created with higher energy density, power density and efficiency levels than other forms of pyroelectric energy conversion. The next stage of research will be to better optimize the thin film materials to specific waste heat streams and temperatures. How could such technology be applied to everyday life?

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