



A more efficient way to turn heat produced during manufacturing into electricity | Photo source [SPECIFIC – Swansea University](#)

[Innovation](#) > [Sustainability](#) > [A better way to turn heat into electricity](#)

A BETTER WAY TO TURN HEAT INTO ELECTRICITY

 SUSTAINABILITY

This 3D-printed device could help reduce carbon emissions and increase electricity efficiency

Researchers at [UK-based Swansea University](#) have developed a potentially more efficient way to turn heat produced during manufacturing into electricity. The 3D-printed device could help reduce carbon emissions and increase electricity efficiency, [according to the research team](#).

There is nothing new about thermoelectric materials, which use heat to generate electricity – or the other way around. But the Swansea team found a way to potentially do it [more effectively and at a lower cost](#).

The team built on a previous study, [which found that a compound of tin \(Sn\) and selenium \(Se\) is good a thermoelectric material](#). The problem with the original research was that the process required a great deal of energy, which made it expensive. The team, however, [turned the compound into ink](#). The researchers then created a 3D printer capable of building a thermoelectric generator with that ink.

“Turning waste heat into electrical power can boost energy efficiency significantly, cutting bills and reducing carbon emissions. Our findings show that printed thermoelectric materials using tin selenide are a very promising way forward,” [researcher Matt Carnie said](#).

The team is from SPECIFIC Innovation and Knowledge Centre, a Swansea University-led project. SPECIFIC develops technologies aimed at reducing carbon emissions. The team's work with tin selenide has already caught the attention of Tata Steel. The manufacturer is reportedly preparing to support further research into the industry applications of the device.

12th June 2019

Email: info-specific@swansea.ac.uk

Website: specific.eu.com

Contact: specific.eu.com/contact/

[Download PDF](#)

Takeaway:

An estimated 1/6 of all energy used by the industry sector in the UK is emitted into the atmosphere as waste heat. That is bad for business because it represents wasted resources. It is also bad for the environment because it adds to carbon emissions. The Swansea University research could provide a way for manufacturers to make better use of the energy they use. Springwise has spotted other efforts to develop technology that will help industries cut waste and reduce carbon emissions. For instance, researchers at Swansea's SPECIFIC centre have also created a building that generates more energy than it uses and scientists at the University of Exeter have developed a cleaner type of concrete.