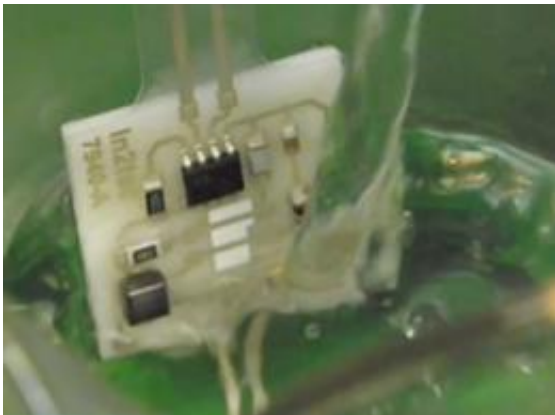


Recyclable electronics: Just add hot water

October 29 2012



Recycling this printed circuit board is as easy as making a cup of tea - simply add hot water, and the bonding material dissolves away leaving you with 90% of your components to re-use as you wish.

The National Physical Laboratory (NPL), along with partners [In2Tec Ltd](#) (UK) and [Gwent Electronic Materials Ltd](#), have developed a printed circuit board (PCB) whose components can be easily separated by immersion in hot water. The work was part of the ReUSE project, funded by the UK government's [Technology Strategy Board](#).

The electronics industry has a waste problem - currently over 100 million electronic units are discarded annually in the UK alone, making it one of the fastest growing waste streams.

It was estimated in a DTI-funded report, that around 85% of all PCB scrap board waste goes to landfill. Around 70% of this being of non-

metallic content with little opportunity for recycling. This amounts to around 1 million tonnes in the UK annually equivalent to 81 x HMS Belfasts.

The aim of the ReUSE (Reuseable, Unzippable, Sustainable Electronics) project was to increase the recyclability of electronic assemblies, in order to avoid an ever-growing volume of waste.

The project partners designed, developed and tested a series of unzippable polymeric layers which, while withstanding prolonged thermal cycling and damp heat stressing, allow the assemblies to be easily separated at end-of-life into their constituent parts, after immersion in hot water.

This revolutionary materials technology allows a staggering 90% of the original structure to be re-used. For comparison, less than 2% of traditional PCB material can be re-used.

The developed technology lends itself readily to rigid, flexible and [3D structures](#), which will enable the [electronics industry](#) to pursue new design philosophies - with the emphasis on using less materials and improving sustainability.

The ReUSE disassembly process is demonstrated in the video below:

Provided by National Physical Laboratory

Citation: Recyclable electronics: Just add hot water (2012, October 29) retrieved 13 May 2024 from <https://phys.org/news/2012-10-recyclable-electronics-hot.html>

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