

# The Research Centre CIDETEC Surface Engineering in San Sebastian leads a project that will design the sustainable electronics of the future

- The Project INNPAPER started on January, 17<sup>th</sup>; and it aims to develop a system of electronic devices made out of paper.
- Paper-based electronics mean a step forward in the fight against electronic waste.
- The project has a budget of €7.5 million and involves 15 European partners.

San Sebastián, January 15, 2018 — Temperature sensors, drug tests and disease detection devices made out of paper: the future of green electronics starts in San Sebastián under the name of INNPAPER. The project, funded by the European Commission, aims to develop alternative solutions to traditional electronics. The technological research Centre CIDETEC Surface Engineering leads this project, which has 15 partners that include research centres, universities, technological companies, and SMEs. On the days 17<sup>th</sup> and 18<sup>th</sup>, the partners met in San Sebastián to coordinate the first steps of this international project that will last 3.5 years.

During this time, the purpose of INNPAPER will be to integrate a series of alternative electronic devices in a common platform. These are composed of paper and inks especially designed for printing electronic devices. This marks a milestone in the search for an alternative to traditional electronics, whose materials pose an environmental problem known as electronic waste or e-waste.

By 2021 the project will develop three devices that will show the wide range of applications of this technology: smart labels to measure temperature, humidity, and pressure, to monitor the preservation of food products; drug detection devices for cannabis in saliva and caffeine in liquids; and diagnostic devices for influenza virus and streptococcus A bacteria, which causes amygdalitis.

INNPAPER is a project funded by the European Commission H2020 program, in which Spanish research centres and companies play a relevant role. Apart from CIDETEC, that coordinates this project, the companies Guarro Casas (paper manufacturing), Biolan Microbiosensores (specialised in quality control and food security sensors) and Scienseed (science communication agency) take part in the project. The project also involves partners scattered across Europe: the French Alternative Energies and Atomic Energy Commission, Marseille University and Vertech Group (France), Aalto University, VTT Technical Research Centre and Spinverse (Finland), Skanem (Norway), Varta and Securetec (Germany), YD Ynvisible (Portugal) and Coris Bioconcept (Belgium).

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## Additional Information

### The e-waste problem

Discarded electric and electronic devices receive the name of e-waste. It is a growing concern that affects environment as well as human health. Its recycling and collection puts at risk the people in charge of these tasks, who usually live in developing countries. According to a United Nations [report](#), in 2016 we produced more than 40 million tonnes of e-waste around the world. This means that each one of us generates around 6 kg of e-waste every year.

### Paper, a sustainable solution

To face the e-waste problem, developing alternative systems to traditional electronics is one of the possible solutions. These systems require less plastic and metal in their manufacture process. Due to its high recyclability, paper arises as an ecological alternative. Its internal composition, based on cellulose fibres, allows us to modify its properties, to deliver multiple applications: paper that conducts electricity, that absorbs or repels water or that sustains high temperatures without burning.

To evaluate the environmental impact of the materials and devices developed by INN PAPER, the partners Vertech Group and Guarro Casas will study their life cycle along the whole project, to evaluate the environmental footprint and the reusability and recycling possibilities.

### Nanotechnology, paper and ink

Paper opens a world of possibilities: special inks can be used, to give specific areas of the paper new properties. This allows the design of elements that are equivalent to traditional electronic circuits: cables, resistors or batteries. Within INN PAPER, CIDETEC leads the development of these inks, given its specialization in nanotechnology.