SYMPHONY

AIMS TO DEVELOP A COST-EFFICIENT AND ENVIROMENTALLY FRIENDLY REALIZATION OF ENERGY HARVESTING

The Symphony solution will significantly reduce CO_2 emissions by increasing the lifetime of wind turbines, making room heating/cooling more efficient, through presence and motion tracking smart floors and decreasing the energy consumption in e-bikes, through remote tube pressure control.

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SMART MATERIALS FOR

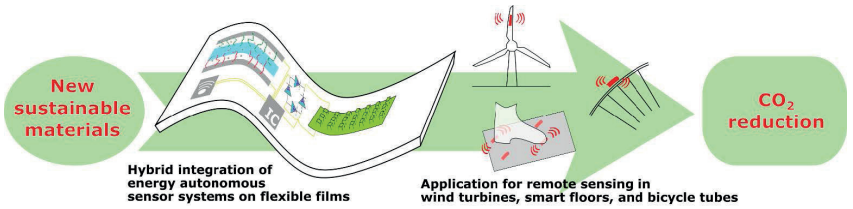

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Figure 1: Scheme of the Energy Autonomous Sensor System, applications and goal.

The H2020 European research project SYMPHONY (Smart Hybrid Multimodal Printed Harvesting of Energy), coordinated by Joanneum Research, has started on 1st May 2020. The SYMPHONY project will deliver an energy supply platform for the powering of wireless sensor nodes for monitoring remote or difficult-to-access locations.

The kick-off meeting of the SYMPHONY project has been organized remotely on 13-14 May 2020. During the meeting, with the participation of the EC Project Officer Achilleas Stalios, the SYMPHONY partners, comprising 13 top EU innovation performers (researchers and companies) from 4 European countries, have discussed possible solutions to the following challenges:

• How to ensure reliable and autonomous power supply for condition monitoring in remote locations, using dislocated and disordered energy sources?

• How to avoid the use of batteries (and their potentially hazardous waste), rare elements and heavy metals?

• How to make sure that the developed devices can be produced using a low-cost and scalable printing and structuring process?

• How to drastically reduce CO2 emissions, calculated through a Life Cycle Analysis, in 3 application cases: condition monitoring in wind turbine, energy efficient room heating/

ENERGY HARVESTING

cooling and tube pressure control in e-bicycle?

The SYMPHONY project is addressing all these challenges with the development of an innovative energy autonomous sensor system. The energy supply in this system is completely made of printed, recyclable, and non-toxic materials including the ferroelectric polymer P(VDF-TrFE), printable Si-based rectifiers, redox polymer batteries and cellulose-based supercapacitors. The SYMPHONY project develops cost effective and scalable methods to print these materials on flexible films and to combine them with energy efficient electronics and sensor technologies. With the scalable and low-cost processing in combination with optimized ICs for energy harvesting the SYMPHONY project strives the goal of a specific cost below 1€/mW harvesting power.

The SYMPHONY solution will significantly reduce CO2 emissions by increasing the lifetime of wind turbines, making room heating/cooling more efficient, through presence and motion tracking smart floors and decreasing the energy consumption in e-bikes, through remote tube pressure control. Moreover, the printed technology developed in the project can be integrated cost effectively in stretchable and flexible devices, representing a huge potential for usage in a wide range of further IoT-supported applications.

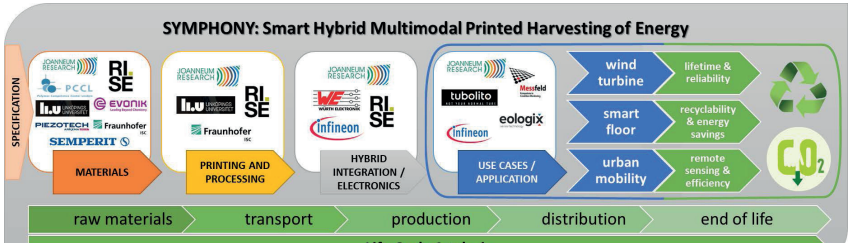

Figure 2: SYMPHONY project – technology development roadmap.

Partner

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