



SYMPHONY

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

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.

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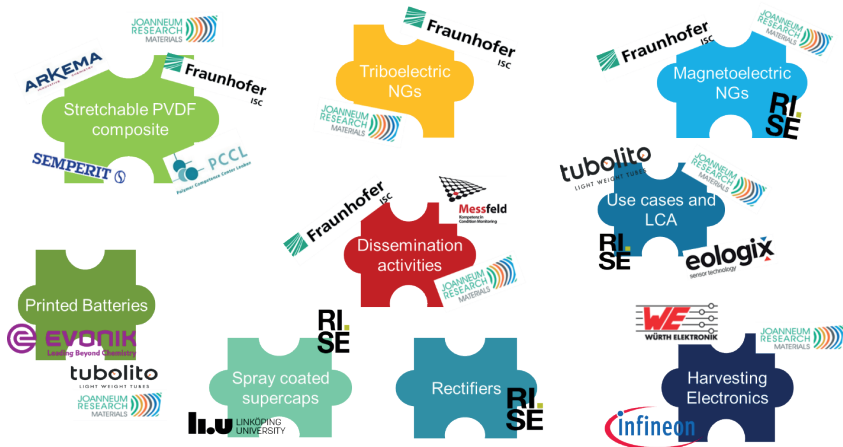


Figure 1: Visualization of the key SYMPHONY elements and related partners

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One year of SYMPHONY project has gone, bringing several interesting results in terms of materials and components. The key elements of the SYMPHONY Energy Autonomous Sensor System (energy harvesters, energy storage, rectifiers, supercapacitors, chips, and electronics) are now under development.

The approach to develop a printable and stretchable P(VDF-TrFE) composite as energy harvester has proved to be successful in the first experimental trials. Also, the

first preliminary tests with triboelectric and magnetolectric materials have shown the technical feasibility to produce the required nanogenerators. These results are the base for the implementation of scalable and low-cost methods, already in progress, to print these materials on flexible films.

An important aspect considered during the development stage of the SYMPHONY materials is the definition of a methodology for the Life Cycle Assessment and the identification of environmental hotspots,

SHOWING A SHAPE

which contribute to the development of the SYMPHONY eco-friendly solutions.

The work performed on rectifiers, supercapacitors and polymer-based batteries is done considering in parallel experiments on materials and manufacturing trials. This approach will contribute to optimize the process parameters, one of the biggest challenges in the production of such components.

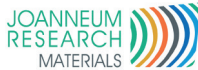
In the last months, in parallel with the first measurements on materials, progresses occurred concerning the design of the harvesting electronics and chips. The aim is to optimize the Integrated Circuits of the SYMPHONY system to provide the required energy and autonomy of the sensors that will be integrated into the 3 use cases (wind turbine, bicycle tube and smart floor).

13 partners and more than 80 researchers are collaborating

under the SYMPHONY umbrella to develop an innovative, cost-efficient, and environmentally friendly energy harvesting solution. Such solution is applicable to a wide range of further IoT-supported applications, as demonstrated by the expressions of interest received from industries in the field of automotive, logistics, railways, small devices, etc.

The SYMPHONY technical activities are also supported by the dissemination of the publishable results, by the analysis of the Intellectual Property, to ensure the innovation level of the project developments, and by the discussions for the identification of the most suitable exploitation strategies.

Partner



Funding agency



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