

# PROJECT ACTIVITIES

- Joint Exploratory Research
- Staff Exchanges and Externships
- Technical Trainings for Young Researchers
- Research Management Capacities and Administration Workshops
- Creation of Sustainable Network with Joint Long-Term Research Strategy



# OPEN ACCESS PROJECT REPOSITORY



Open-access comprehensive online repository of COMP-ECO workshops' materials created for use by researchers, students and SMEs for accessing state-of-the-art knowledge from TU Delft and TU Dresden in

- Design, manufacturing, testing and sustainability of advanced composite materials
- Proposal writing, project management and administration, scientific paper writing and commercialisation and patenting

# PARTNERS

## 3 Polish Institutions from Mazovia Region



**Technology Partners Foundation**



**Airforce Institute of Technology**



**Warsaw University of Technology**  
Faculty of Material Science and Engineering

## Twin with Leading EU Universities



**Technical University of Dresden**  
Institute of Lightweight Engineering and Polymer Technology (ILK)  
Germany



**Technical University of Delft**  
Department of Aerospace Structures and Materials  
The Netherlands



[www.comp-eco.eu](http://www.comp-eco.eu)



### TECHNOLOGY PARTNERS FOUNDATION

Warsaw, Poland  
<https://technologypartners.pl/>

### PROJECT COORDINATOR

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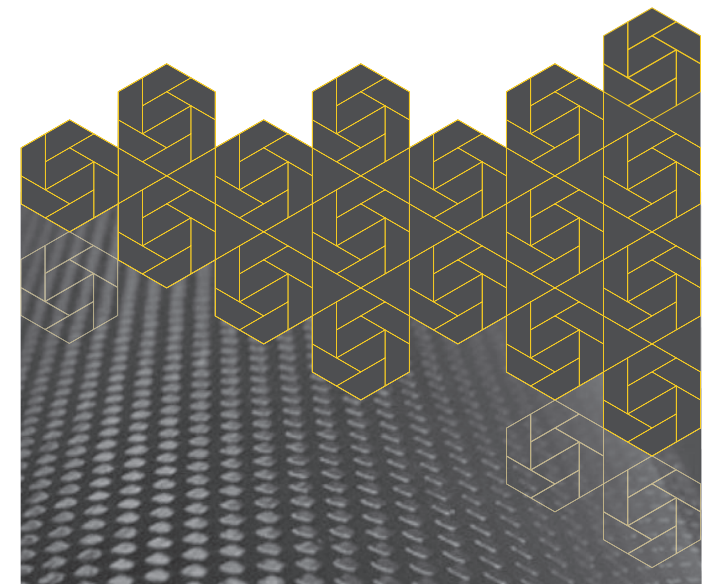
### PROJECT ADMINISTRATION AND COMMUNICATION

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# COMP-ECO

**Strengthening Mazovian Multifunctional Composite Ecosystem through a Holistic Approach and a Strategic Alliance with European Leaders**

Twinning project aimed to improve research excellence of Polish composite ecosystem and to create sustainable network with leading EU universities



# Joint Research in Fibre-Reinforced Polymer Composites and Smart Structures

## PROJECT RESEARCH

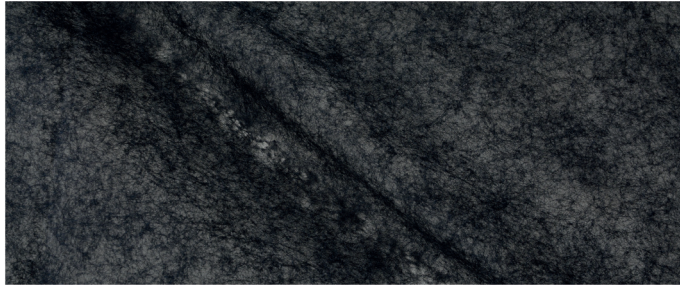
The exploratory research will focus on creating a synergistic effect by combining the competences of all five partners, and on the practical implementation of knowledge gained during exchanges and workshops.

In particular, it will focus on using **CNT-doped fibres, veils or strips to provide self-sensing capabilities, to encapsulate sensors** facilitating their embedment into the composite, and to protect them in service.

Thanks to the self-sensing capabilities and/or the encapsulated sensors such parameters of the composite as load and stiffness changes, disbanding, delamination and micro-cracking will be measured.

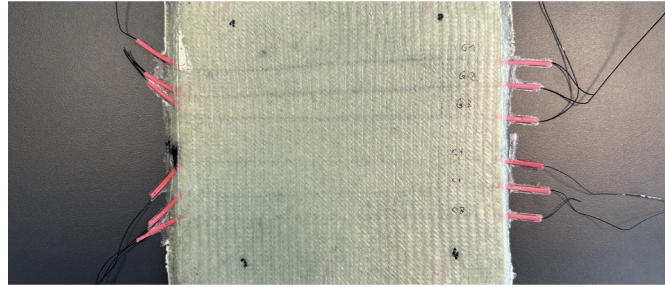
The information collected on the current structural health will allow to improve maintenance efficiency and safety of the composite structure.

### RESEARCH CAPABILITY 1 Development of Self-diagnostics Capabilities of the Composite



The electroconductive carbon nanotubes (CNTs) will be integrated in the composite's matrix during the manufacturing process. In this case the composite structure becomes a "sensor" based on the introduced CNTs which form a conductive percolating network remarkably sensitive to initial stages of matrix-dominated failure.

### RESEARCH CAPABILITY 2 Embedding PZT Sensors, Encapsulated in Velis, in the Composite Structure



Piezoelectric (PZT) sensors encapsulation into veils will ensure their accurate placement in the structure and to protect them in service. NDI techniques will be used to validate the quality of the laminate.

