



Politecnico  
di Torino

## DIMEAS SEMINAR

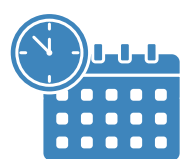
# NEW TECHNOLOGIES AND MATERIALS USED TO PRODUCE LIGHTWEIGHT THIN-WALLED STRUCTURES

## SPEAKER



**Andrzej Kubit**

RZESZOW UNIVERSITY  
OF TECHNOLOGY  
(POLAND)



**Wednesday February 19 2025,  
at 2.30 pm**



**SALA FERRARI, II floor, DIMEAS  
Politecnico di Torino**

## PROGRAM

### Abstract

The seminar will focus on GFRP composites produced from 3D Parabeam glass fabrics. These fabrics consist of two outer layers with cross-links between them, which determine the composite thickness. The cross-links enable the creation of a structure typical of sandwich composites through a single lamination process. Composites produced in this manner are characterized by low labor input during the production of rigid composite structures.

The application of these composites will be demonstrated using a light-sport aircraft structure as an example. The seminar will also present the properties of the LITECOR metal-plastic composite, as well as research results on the potential methods for joining such composites with sheets. In particular, the results of fatigue strength tests of composite joints with steel sheets will be discussed.

Another area of focus will be the plastic forming of lightweight, thin-walled structures based on the composite in question. The seminar will showcase two plastic forming technologies using the example of shaping longitudinal stiffening embossments. The first is incremental sheet forming, and the second is traditional stamping in a punch-die system. The results of research will be presented, including forming forces, layer deformation in the composite, and the maximum depths of the embossments.

Finally, the seminar will address the properties of joints in thin-walled structures made using RFSSW welding technology.

### Biography

Andrzej Kubit is a Associate Professor at the Rzeszow University of Technology, Faculty of Mechanical Engineering and Aeronautics, Department of Manufacturing Processes and Production Engineering. Main specialization: new technologies for joining thin-walled stiffened structures used in the aerospace and automotive industries. Tests of structural joints under static, dynamic and fatigue loads.

Over 150 scientific publications on research on the properties of joints of thin-walled structures. Over 30 patents regarding technology for producing thin-walled structures. Manager and contractor in many research projects related to testing joints of thin-walled load-bearing structures.

His work has been recognized with two IEEE Best Paper Awards (RA-L; IROS) and third prize for the Best Ph.D. in Robotics in the UK. He serves as Associate Editor for IEEE Robotics and Automation Letters, technical chair for top robotics conferences (IROS, ICRA), and Program Chair for ICUAS 2025.