



## INDIVIDUAL KEY PROJECT

No. POIG.01.01.02-00-015/08-08

# MODERN MATERIAL TECHNOLOGIES IN AEROSPACE INDUSTRY

## OPERATIONAL PROGRAMME „INNOVATIVE ECONOMY”

Priority 1. Research and development of modern technologies  
Measure 1.1. Support of scientific research for the knowledge-based economic development  
Submeasure 1.1.2. Strategic programmes of scientific research and development

**2008-2013**

## PROJECT CONSORTIUM

- Rzeszow University of Technology - Coordinator
- Lublin University of Technology
- Silesian University of Technology
- Czestochowa University of Technology
- Lodz University of Technology
- Warsaw University of Technology
- Institute of Fundamental Technological Research, Polish Academy of Sciences in Warsaw
- Institute of Fluid-Flow Machinery, Polish Academy of Sciences in Gdansk
- Institute of Aviation in Warsaw
- Air Force Institute of Technology
- University of Rzeszow
- “Aviation Valley” Association



PROJECT CO-FINANCED BY THE EUROPEAN UNION  
FROM THE FUNDS OF THE EUROPEAN REGIONAL  
DEVELOPMENT FUND

## The aim of the project

The aim of the project is to focus the research work in the field of aviation on the areas which will improve the competitiveness of the Polish economy, particularly the “Aviation Valley” firms. This aim is consistent with the main target of the “Development of Polish Economy Based on Innovative Enterprises” programme.

Technological solutions arising from the project will positively affect Polish aviation enterprises which will lead to the development of the regional as well as national economy. The implementation of the project will result in the increased employment of highly-qualified technical personnel both in the research and production areas. The improvement of the scientific base and research infrastructure will fuel highly advanced research work enabling knowledge to be transferred to the aviation industry.

This joint project which combines individual achievement as well as the competence of the partners provides the basis for the development of innovative solutions and modernization of the existing technology. This will increase the competitiveness of our industries and scientific research units. The close link between the project outcome and industry will permit the streamlining and increased effectiveness of the use of public funds allotted for research. The project is a joint undertaking of the **Centre of Advanced Technology AERONET “Aviation Valley”**.



1st Project Conference

## The description of the project

There are fifteen main research tasks realized within the project aimed at the most advanced and rapidly developing area of materials engineering, surface engineering and cutting edge manufacturing technologies in the aerospace industry. The segments of the project include:

- ZB1. Development of advanced processes of HSM of almost unworkable aeronautical alloys.
- ZB2. Modeling, construction and control of the HSM process taking into consideration the configured machine-instrument-detail system.
- ZB3. Development of the technology of effective design and production of cone gear using Gleason Phoenix system.
- ZB4. Development of a new, simpler and cheaper toothed gear in place of complicated and expensive planetary gears.
- ZB5. Modern mechanical working of magnesium and aluminium alloys.
- ZB6. Composite materials of increased strength and thermal resistance with the use of polymeric resins applied in aviation.
- ZB7. Plastic forming of magnesium alloys (precision forging, stamping, extrusion and the like).
- ZB8. Plastic forming of aeronautical Al (including Al-Li) and Ti alloys.
- ZB9. Composite metallic materials in aviation applications (including Glare-type materials).
- ZB10. Modern barrier covers on critical engine parts.
- ZB11. Aeronautical materials of advanced structure (monocrystal, directional crystallization).
- ZB12. Precision casting of Ni alloys on critical parts of aircraft engines.
- ZB13. Development of the technology of remelting nickel alloys with the use of nanopowder modifications.
- ZB14. Smart embedded systems based on intelligent materials.
- ZB15. Unconventional technologies of joining elements of aeronautical constructions.

## PROJECT OFFICE

**Rzeszow University of Technology**

Powstancow Warszawy ave. 8, 35-959 Rzeszow  
Building L 29B, rooms 139,138

Tel. +48 17 865 15 17, Tel. +48 17 865 12 37, Fax: +48 17 865 12 37

e-mail: pkaero@prz.edu.pl, www: http://pkaero.prz.edu.pl