



SUCCESS STORIES

HANCOG: HARd NanoCOMposite Coatings

PROJECT DESCRIPTION

The main aim of the project is the development and optimization of a novel technology of thin nanocrystalline, composite PECVD W-W/C, TiB_x, TiB_x(C,N)_{1-x}, superhard coatings. Specific objectives include the development of a technology based on the decomposition of the carbonyl precursors of various metals, which is economical and suitable for coating large components on industrial scale, and to address the problems of conventional magnetron sputtering technologies in this case.

The milestones of the project include:

- Optimization of the technological routes for preparation of the nanocomposite W-WC, WC/C, TiB_x and TiB_x(C,N)_{1-x} layers by a hybrid method based on decomposition of the corresponding carbonyl precursors;
- Verification of the possibilities for the extension of the technology for the systems W –Ti – B – N and/or W –Ti – B – C;
- Investigation of the structures of the obtained coatings dependent on technology;
- Measurement of mechanical and tribological properties of the coatings;
- Preparation of the patents based on the obtained results;
- Possible transfer of the technology into production at the regional SME.

The originality of the project proposal is the combination of the nanocomposite structure of the coatings for achieving super-hardness for less studied W-based (and Ti-B) systems with novel hybrid method, which has specific advantages and which is suitable for large size components and industrial production.

The expected results include: >3 patents for the preparation of superhard coatings, >6 publications in the international peer reviewed journals, >2 or more PhD students, possibility of a transfer of the technology into production at the regional SME-s.

PARTNERS:

Project coordinator: Commerc Service, s.r.o., Presov, **Slovakia**

Project partners: AGH University of Science and Technology (AGH-UST), Cracow, **Poland**
HACO, Sp. z o.o., Cracow, **Poland**



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PROJECT DURATION AND TOTAL PROJECT COST:

Duration: 01/01/2009-31/12/2011

Cost: 685.000 Euro

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