FINAL PUBLISHABLE SUMMARY REPORT

Project's objectives, main conclusions and potential impact

The main result of the FUNCTIONAL Project has been the strengthening in research international cooperation among four partners, two located in EU (Spain and Germany) and the other two located in third countries (Brazil and Mexico). These four partners have reinforced their scientific and technological capacities in the development of high performance surfaces trough a coordinated exchange programme based on the secondments of different types of researchers (experienced and early stage). On the other hand, new capacities have been acquired trough management secondments regarding the different research programmes looking for new cooperation opportunities and projects.

The main FUNCTIONAL objectives have been fulfilled:

- Collaboration between European R&D centres and third countries research organism have been strengthened.
- Trough the research and management secondments, the four partners have developed new capacities.
- The research cooperation between EU and third countries is being maintained and its continuation is expected beyond the end of the project.

During the lifetime of the FUNCTIONAL project, 27 researchers have taken the opportunity to acquire new capacities and knowledge doing secondments, being almost 50% women. 4 of them have made management secondments, 8 people have been early stage researchers and finally, 15 people have developed secondments as experienced researchers. In total, almost 65 months of research have been carried out.

For four years, different technical activities related to obtaining nanostructured powders, fabrication of functional surfaces trough different advanced technologies and characterization of these surfaces against wear and corrosion were performed. The main results of these activities carried out during the secondments, were disseminated trough several conferences and workshops (*International Latin American Conference on Powder Technology, 4th International Conference on Scientific and Technical Advances on Friction Stir Welding and Processing FSWP, TMS Annual Meeting & Exhibition)*, joint papers (*Materials Science Forum, Friction Stir Welding and Processing VIII, Proceedings of the 5th international WIEM congress*) and seminars, workshops and fairs (*Navalia, 2 Congreso internacional de ciencia y tecnología aplicada 2015, GT4-SUAPE Global meeting*). Together with technical activities, other networking actions, contacts and/or cooperation agreement were developed with different companies (*ENERFLUX, NUCLEBRAS EQUIPAMENTOS PESADOS, CHESF, SHIMADZU from Brazil, GKN-DRIVELINE and GAMESA from Mexico, I-CUBE, FORESA COMPANY, ACLUNAGA, CARDAMA, VALIÑO, VICUS, GAMELSA AND INTEGASA from Spain*), public and private research centres (*ITEP: Instituto de Tecnologia de Pernambuco, LAPROSOLDA: Center for research and Developing on Welding Processes, CETENE: Centro de Tecnologias Estratégicas do Nordeste, CEERMA: centro de Estudos e Ensaios em Risco e Modelagem Ambiental and*

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Departamento de Engenharia de Materiais, Universidade Fedearal do Rio Grande do Norte from Brazil, CIIIA & UANL: Centro de Investigacion e Innovacion en Ingeniería Aeronáutica, Universiad de Nuevo León, CIDETEQ: Centro de Investigación Desarrollo Tecnológico en Electroquímica and ITM: Instituto Mexicano del Transporte from Mexico, PRODINTEC TECHNOLOGY CENTER, UNIVERSITY OF VIGO, UNIVERSITY OF CORUÑA, UNIVERSITY OF SANTIAGO DE COMPOSTELA, UNIVERSITY OF MURCIA, UNIVERSITY COMPLUTENSE OF MADRID AND MANRESA TECHNOLOGICAL CENTER from Spain) and organisms (*FACEPE: Fundaçao de Amparo a Ciencia e Tecnologia do Estado de Pernambuco from Brazil, CDTI: Centro para el desarrollo tecnológico Industrial from Spain and Spanish National Contact Points from different areas*) from different countries were made to promote future partnerships and collaborations.

Based on the knowledge gained by AIMEN, HZG, UFPE and COMIMSA, they have been able to develop more ambitious research activities as well as use it to develop innovative products, technologies and services in close collaboration with other research organisms. Moreover, the 4 participant's organizations have enhanced their individual and joint position in the International Research Area, having more visibility and recognition. Moreover, the technological centres will be able for using the results beyond the project in order to improve their capacities to face the requirements of their industrial customers. The mutual transfer of knowledge have let the partners to strength their researching and technological lines in the application of nanotechnology and surface technologies for the common benefit.

Keywords

Functional surfaces, wear, corrosion, laser deposition, friction stir processing, friction surfacing, international cooperation, exchange, secondments

Further Information

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More information on the Functional Project is available at www.functionalproject.eu/

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