



CASOS DE ÉXITO



VII Programa Marco: MEDIO AMBIENTE (incluido Cambio Climático)
Jornada de Presentación Convocatorias 2013

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CDTI c/Cid, 4 Madrid



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Centro tecnológico I+D+i



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Centro Tecnológico I+D+i ACCIONA. Madrid

Datos del Centro Tecnológico de **ACCIONA Infraestructuras** en Madrid

- **160 profesionales** altamente cualificados dedicados exclusivamente a I+D
- Equipo profesional **internacional y multidisciplinar**.
- **Constructora líder en I+D en Europa:** más de 15 años de experiencia desarrollando tecnologías en construcción.
- Primera constructora de Europa en contar con su **propio Centro Tecnológico:**
 - **3.500 m²** de superficie
 - **17 laboratorios de investigación** totalmente equipados
 - **2 Talleres de producción de 1.600 m²** cada uno, para la fabricación de prototipos

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PROYECTOS DE ACCIONA EN FP7ENV

Retorno de FP7

ACCIONA Infraestructuras, 4ª empresa española con mayor retorno en el VII PM (2007-2010), según informe del CDTI. Resultados provisionales 2007-2010 de la participación española en el VII PM.

| Empresas | Actividades | |
|--|-------------|-----------|
| | Nº | Lideradas |
| Telefónica Investigación y Desarrollo, S.A. | 74 | 12 |
| Atos Spain , S.A. | 66 | 17 |
| Abengoa Bioenergía Nuevas Tecnologías. S.A. | 4 | 1 |
| Acciona Infraestructuras, S.A. | 47 | 5 |
| Indra Sistemas, S.A. | 12 | 2 |
| Novatec Solar España, S.L. | 1 | 0 |
| Ingeniería de Sistemas para la Defensa de España, S.A. | 15 | 2 |
| Red Eléctrica Corporación, S.A. | 3 | 1 |
| Starlab Barcelona, S.L. | 14 | 4 |
| Indra Espacio, S.A. | 8 | 1 |

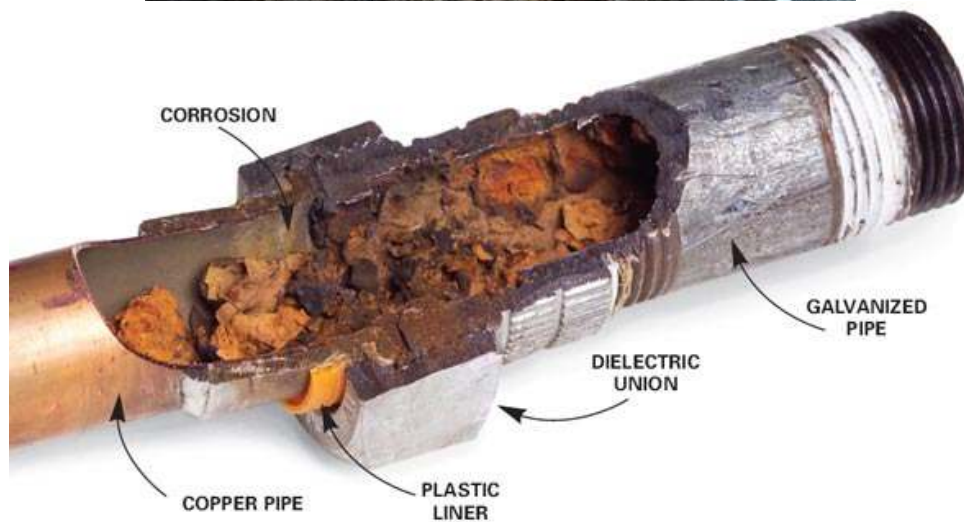
PROYECTOS DE ACCIONA EN FP7ENV

Proyectos en los que participa ACCIONA Infraestructuras

| ACRÓNIMO | TOPIC | LÍDER | PUNTUACIÓN |
|---------------------|----------------------|--------------------------|------------|
| TEACH | FP7.ENV.2007.3.2.1.1 | ISAC-CNR | 14,5 |
| CLIMATE FOR CULTURE | FP7.ENV.2008.3.2.1.1 | FRAUNHOFER | 13,5 |
| FLOODPROBE | FP7.ENV.2009.3.1.5.1 | DELTARES | 14,5 |
| OPENHOUSE | FP7.ENV.2009. | ACCIONA Infraestructuras | 14,5 |
| HOMBRE | FP7.ENV.2010.3.1.5-2 | DELTARES | |
| IRCOW | FP7.ENV.2010.3.1.3-1 | TECNALIA | |
| BIOCORIN | FP7.ENV.2011.3.1.9-1 | ACCIONA Infraestructuras | 14,5 |

CASOS DE ÉXITO

PROYECTO BIOCORIN



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BIOCORIN

New Biocoating for Corrosion Inhibition in Metal Surfaces

| Project Acronym | BIOCORIN | |
|--------------------|--------------------------------------|-----------------|
| Grant Agreement No | 282881 | |
| Call identifier | FP7-ENV.2011.3.1.39-1 ECO-INNOVATION | |
| Coordinator | Edith Guedella | ACCIONA (Spain) |
| Start Date | 01/03/2012 | |
| End Date | 01/09/2015 | |
| Duration | 42 months | |
| Total Budget | 4.045.875,44 € | |
| Total Funding | 2.906.137 € | |

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ACCIONA
(Spain)



BIOPROSPERITY
(Greece)



GIRARDI
(Italy)



Gruppo CSA
(Italy)



IFB
(Slovenia)



INBIOTEC
(Spain)



STRESS
(Italy)



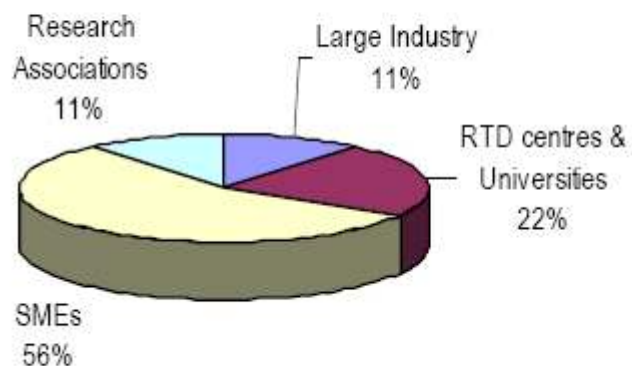
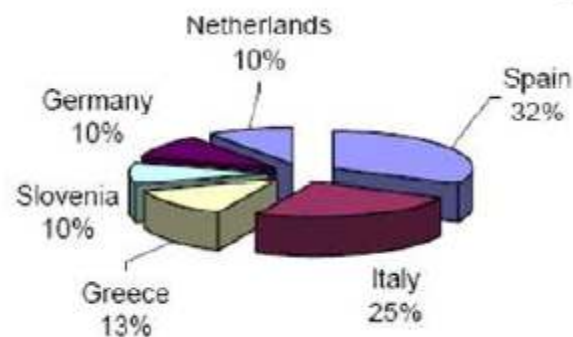
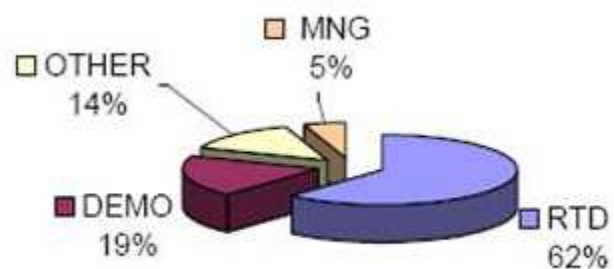
TU BAF
(Germany)



VLCI
(Netherlands)

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Concepto

- Se estima que las pérdidas económicas debidas a la corrosión de equipos e infraestructuras ascienden a más de **€1.32 billones al año**.
- El 25-30% de la corrosión anual puede evitarse optimizando las prácticas anticorrosión.
- Se estima que la corrosión inducida por microorganismos (MIC) interviene en al menos el 10% de los problemas de corrosión en estructuras (50% de tuberías subterráneas).
- El impacto económico potencial del tratamiento anti-MIC puede significar aproximadamente **€612.000 millones al año**.
- Las últimas investigaciones tratan de buscar soluciones anticorrosión medioambientalmente amigables en sustitución de los actuales compuestos dañinos con el entorno (ej. compuestos basados en tributyltin prohibidos en 2008).



Objetivo Principal

Desarrollo de una tecnología innovadora, biomimética y ecoeficiente medioambientalmente para la inhibición del MIC producida por biofouling mediante la integración de microorganismos en un recubrimiento de sol-gel para superficies de metal en estructuras de ingeniería civil en entornos marinos y terrestres (puentes, tuberías, puertos...)



Actividades de BIOCORIN

- WP1 – Microorganisms and inhibitors to be included in the sol-gel matrix - **INBIOTEC**
- WP2 – Synthesis of a sol-gel enriched matrix for corrosion inhibition – **TU BAF**
- WP3 – Environmental aspects of the biomimetic developed coating - **CSA**
- WP4 – Demonstration - **ACCIONA**
- WP5 – Awareness and Dissemination - **STRESS**
- WP6 – Business models and exploitation - **BIOPROSPERITY**
- WP7 – Project management - **ACCIONA**



Demostradores



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PASOS SEGUIDOS

- Identificación del topic que mejor encajaba para la idea
- Asistencia a INFODAYS y ayuda del CDTI para la identificación de lo que quería la comisión con el topic
- Entender muy bien el concepto de EcoInnovation y posibles indicadores de evaluación
- Políticas asociadas: muchas de ellas nos las propuso el CDTI
- Búsqueda de socios: principalmente SMEs a través de CORDIS
- Demo y Explotación planteado desde el inicio del proyecto
- Primera fase: tener en cuenta el ESR que nos pasó el CDTI aunque la comisión dijese específicamente que no se iba a tener en cuenta y que el evaluador iba a ser distinto
- Introdujimos un socio para la realización de monitorización y así completar la cadena de valor del consorcio
- Añadimos un demo para cubrir un mayor número de regiones

| Topic ENV.2011.3.1.9-1 Eco-innovation | Contribution of BIOCORIN to the objectives |
|--|---|
| <p>Research and development of novel eco-efficient environmental technologies (including monitoring) whose use can substantially contribute, directly or indirectly, to the reduction of materials and resource use, energy consumption, polluting emissions, etc.</p> | <p>Development of an innovative biomimetic and eco-efficient environmental technology for inhibiting microbial induced corrosion and biofouling based on the addition of microorganisms in a sol-gel coating for metal surfaces of civil engineering structures in marine and terrestrial environments</p> |
| <p>Whose effectiveness can be demonstrated through a set of key environmental performance indicators.</p> | <p>The following indicators have been set up for the demonstration of the anti-MIC technology developed under BIOCORIN project: Improved Environmental Performance, considering the following eco-indicators:</p> <ul style="list-style-type: none"> 1.Green House Gasses Emissions 2.Reduction and substitution of dangerous substances 3.Waste management <p>Better use of natural resources</p> <ul style="list-style-type: none"> 1.Reduce resource consumption 2.Reduced energy consumption <p>Economic performance indicators</p> <ul style="list-style-type: none"> 1.Market potential 2.Entry into different sectors 3.Reduction of cost per unit or process 4.Patents <p>Other indicators: reduction of environmental impact in marine ecosystems, due to the fact of substituting toxic compounds by natural compounds</p> |
| <p>Bio-mimetic technologies capable of deriving from nature's way of functioning the design principles leading to eco-efficient processes.</p> | <p>BIOCORIN's technology will take advantage of a biological phenomenon commonly occurring in nature for microbial population regulation to develop an effective coating solution able to prevent anti-MIC corrosion on civil infrastructures.</p> |

| Topic ENV.2011.3.1.9-1 Eco-innovation | Contribution of BIOCORIN to the objectives |
|--|---|
| Direct and indirect impacts, as well as primary and secondary effects, and demonstration of a substantial improvement of the sustainability performance along the entire life cycle of the proposed solutions with respect to currently available state-of-the-art technologies or solutions. | BIOCORIN's technology will be demonstrated both at laboratory and real scale. Three real case studies will be analysed within the frame of LCA and LCCA to demonstrate the economical and environmental advantages of the developed solution compared with current technologies |
| Demonstration of the medium term market potential, the marketing feasibility and address the eventual regulatory and non-regulatory barriers that might limit the exploitation of the proposed innovation. Elements of business plans may considerably help to demonstrate the feasibility and the market potential. | BIOCORIN solution is expected to have an important market impact at European level. The market potential is estimated to be 312 million € in 2015 (see section 3.1.3.A of impact). |
| Expected Impact: provide concrete and measurable environmental, social and economic improvements with respect to today's technologies or systems that help decoupling the use of resources from economic growth. | BIOCORIN's objectives are to increase the durability in a 30% and to decrease the cost in 20% compared with current anti-MIC and antifouling coatings |
| Interest and potential benefit to SMEs. | The interest of SMEs in BIOCORIN project is reflected in the composition of the consortium which consists in more than 50% of SMEs , with a requested funding for SMEs of up to 50% of the project's requested funding. In addition to the benefits and knowledge obtained by the SMES participating in BIOCORIN project, SMEs potentially benefited from the solution developed will include: small coating providers and manufacturers, construction and maintenance service companies, corrosion specialised companies,... etc |



Resumen del informe de evaluación

1. Scientific and/or technological excellence (relevant to the topics addressed by the call)

Score 1: (Threshold 4/5) 5

- **Relevant proposal to the topics addressed by the call** as inhibiting microbe-induced corrosion (MIC) in engineering structures with the development of an eco-efficient environmental technology is important from an economical, technical and environmental point of view.
- **The S and T approach is sound, well developed and coherently presented.** The state of art is very thoroughly analysed and shows that there is a demand for an eco-efficient solution, for an anti-MIC coatings, against biofouling. The innovation that the project brings is based on a biomimetic approach with the addition of micro-organisms in a sol-gel coating for metal surfaces in marine and terrestrial environments.
- **The potential progress beyond the state-of-the-art is important, with very promising market opportunities for both SMEs and large industries. The work plan is well structured and convincing, the deliverables and milestones are very good.** In addition the proposal plans the inclusion of quality checks on both, deliverables and milestones. The proposal has a well-developed **business model and exploitation**, however the analysis of patents related to the current technology should have been done before the submission of the proposal.
- The feasibility, economical and environmental advantages of BIOCORIN technology are intended to be demonstrated both at laboratory and real scale within the frame of **LCA and LCCA**. Different types of risks have been considered and sound contingency plans proposed.



Resumen del informe de evaluación

2. Quality and efficiency of the implementation and the management

Score 2: (Threshold 3/5) 4,5

- **The management and procedures outlined are appropriate for a project of this size and are both robust and transparent;** decision-making protocols are identified and the allocation of responsibilities are clearly outlined.
- **The coordinator is a large construction company with research capabilities and extensive experience in EC-funded programmes.** The proposal has a very good description of the experience and the role of the partners in the project and it shows that the partners are relevant and with good knowledge in the needed areas. The consortium as a whole has the necessary balance and complementarity; there is the necessary critical mass of people to deliver project results. The participation of four complementary SMEs is a strong aspect of the proposal. **The SMEs are very active and well integrated in the project.**
- Another strong point of the proposal is the weight given to **networking with other high value R&D/training activities related to BIOCORIN.** **A weakness of the proposal is that conflict resolution mechanisms are not clearly enunciated and are discussed along with voting mechanisms.**
- The relevant major costs and planned resources have been identified and justified, and even if the estimates are adequate with the planned activities for the most part there are considerable **differences between the costs of different partners for the same activity that needs further justification.**
- Procedures such as Consortium agreement, Decision making, Reporting, Quality Control, Project ecological footprint, Networking, and IPR issues are described in much detail.



Resumen del informe de evaluación

3. Potential impact through the development, dissemination and use of project results

Score 3: (Threshold 3/5) 5

- The **potential impact of the project is very high** given that it proposes to find solutions to a world-wide problem and thus, the expected impact is both at European, and international level. The market affected by corrosion is very big and it is likely that it will keep on growing.
- Although initially focussed on the infrastructure, water and sewage sectors the technology could be transferred to other sectors such as the marine or the oil/gas transmission industry. **The solutions are intended to be eco-innovative and measurable by means of eco-indicators.**
- The proposal addresses direct and indirect impacts, and scenarios are elaborated to validate and clearly demonstrate the improvement, competitiveness and sustainability of bio-based and bio-inspired processes and products through LCA and LCCA. Global market growth potential forecasting studies per targeted business segment, monitoring studies of market dynamics and strategy, as well as a business plan along the whole duration of the project have also been considered.
- The proposed ways in which **the project results will be disseminated are very good and will ensure a very large audience.** The use of indicators to monitor/correct the effectiveness of the dissemination strategy strengthens further the proposal.
- The **IPR issues have been handled in an adequate manner all along the proposal.** The exploitation plans repose on the formation of a new spin off scheme that could commercialise BIOCORIN's outputs in different markets.



Resumen del informe de evaluación

Total score (1+2+3): (*Threshold 11/15*) **14,5**

El esfuerzo MERECE LA PENA

iGracias!



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