



Una manera de hacer Europa



BUENAS PRÁCTICAS Actuaciones Cofinanciadas

RIS3CAT Energy Community and COSIN and NAenCAT projects
Catalonia Institute for Energy Research (IREC)

Programa Operativo de Catalunya

Año 2021

Fondo Europeo de Desarrollo Regional

Presentation of RIS3CAT Energy Community and COSIN and NAenCAT projects as Good Practice

This document sets out the COSIN project on *Synthetic Fuels*, and the NAenCAT project on *New technologies for automation of the medium voltage grid in Catalonia*, which are part of the RIS3CAT Energy Community (Research and Innovation Community for the Smart Specialization of Catalonia). This Community has defined three priority lines of action: promoting energy efficiency, fostering low carbon emission technologies and boosting the smart grid.

A RIS3CAT Community is a sectoral consortium made up of companies, technology centres, universities and other agents of the R&D system with the aim of developing transformational technological projects, with a high impact on the economy, over a three-year period.

The Energy Community, which is coordinated by the Catalonia Institute for Energy Research (IREC), aims to strengthen the Catalan industrial network by creating easily reproducible models to improve the energy efficiency of a range of sectors, promote the internationalization of companies, attract and retain talent, promote qualified technical training, and encourage young professionals to work in industry.

The Community's Action Plan comprises a total of seven projects, including the COSIN and NAenCAT projects, which are being undertaken in the field of major R&D projects and are the subject of the Good Practice being presented here.

The COSIN project involves the participation of several companies and entities that complement each other and whose main objective is to develop synthetic fuels that allow them to be stored chemically, helping to facilitate the challenge of scaling up renewable energies for mass use. It involves a total eligible cost of 2.919.998,54 euros and an ERDF grant of 1.255.339,54 euros. It involves the close collaboration of 7 agents.

Project leader



Participating companies



Technology centres



Universities



For its part, NAenCAT has the participation of various companies and entities which, through the project, aim to provide innovative sensorisation systems (deployment of a system of sensors adaptable to automation), remote control (to facilitate the sending of information between sensors and control centres) and automation, distributed to the electricity grid to make it more intelligent. The objective is to increase the efficiency of the electricity grid, improve the quality of service, detect faults rapidly and provide an immediate response. NAenCAT involves a total eligible cost of 1.653.479,73 euros and an ERDF grant of 538.605,30 euros. It involves the close collaboration of 6 agents.

Project leader



Participating companies



Technology centres



The RIS3CAT Energy Community involves a total eligible cost of 9.513.982,05 euros and an ERDF grant of 3.855.265,07 euros.

The COSIN project will generate two new jobs and the NAenCAT project will generate three new ones. Both projects are expected to execute around 90 new demonstrators and generate 2 new patents.

This operation is being presented as a Good Practice because it meets the following criteria:

1. High dissemination among the beneficiaries, potential beneficiaries and the general public

The following actions are particularly noteworthy:

➤ Operation and information posters:



➤ Presence on websites:



➤ **News publications:**

COSIN: Hacia el biometano y el almacenamiento de energías renovables

15.07.2019 Compartir:   

La planta piloto del proyecto CoSin en la EDAR Riu Sec de Sabadell tiene un doble objetivo: producir biometano a partir del biogás procedente de la digestión anaerobia de lodos de depuradora, y aplicar el concepto Power-To-Gas para almacenar excedentes de energía eléctrica procedente de fuentes renovables en forma de combustible sintético. La unidad de enriquecimiento de biogás implementada por Cetaqua ha conseguido producir biometano de pureza superior al 98%, calidad suficiente para su inyección en la red gasista, y un rendimiento global superior al 99%.

Esta innovadora iniciativa de la Comunidad RIS3CAT Energía está cofinanciada por el Fondo Europeo de Desarrollo Regional de la Unión Europea en el marco del Programa Operativo FEDER de Cataluña 2014-2020.



El proyecto CoSin investiga la producción de gas renovable a partir de biogás de depuradora y el potencial del biometano para almacenar energías renovables.

Proyecto
RIS3CAT CoSin - Combustibles Sintéticos
Duración
Septiembre 2016 - Diciembre 2019
Coordinador
Naturgy
Socios
IREC, Labaqua, Universitat Politècnica de Catalunya, FAE (Francisco Albero S.A.U.) i AMES (Sintered Metallic Components)



El proyecto ha unido esfuerzos de empresas y entidades punteras del sector, incluyendo al IREC, Electra Caldense, iGrid, ZIV y Ormazábal, para poder desarrollar y probar estas tecnologías, que se han instalado y validado en la red con la finalidad de estudiar su impacto y beneficio respecto a los sistemas actuales y poder planificar así su instalación masiva a medio plazo. El objetivo final es **convertir la red eléctrica de Catalunya en una red aún más inteligente.**

Para Electra Caldense, este proyecto supone una "apuesta para dotar a la red eléctrica de la compañía de nuevas capacidades que le permitan adaptarse a los requerimientos de los nuevos tiempos" y "avanzar hacia una red de distribución del siglo XXI".

El responsable del Departamento de Gestión de la Energía de Electra Caldense, Joan Valllovera, ha celebrado el trabajo conjunto llevado a cabo "con un consorcio de alto nivel tecnológico como el NAenCAT, ya que los socios han entendido nuestras necesidades y se han adaptado para obtener el mejor beneficio del proyecto", ha añadido.

El proyecto ha sido cofinanciado por la Unión Europea a través del **Fondo Europeo de Desarrollo Regional (FEDER)** en el marco del Programa Operativo FEDER de Cataluña 2014-2020 y el apoyo de ACCIÓ

➤ **Banner:**



ENERGIÀ
RIS3CAT

ACCIÓ  Generalitat de Catalunya

 Unió Europea
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Aquest projecte ha estat cofinançat per la Unió Europea a través del Fons Europeu de Desenvolupament Regional (FEDER).



 **Unió Europea
Fons Europeu
de Desenvolupament Regional**

Aquest projecte ha estat cofinançat per la Unió Europea a través del Fons Europeu de Desenvolupament Regional (FEDER).

➤ **Social networks:**



Comunitat RIS3CAT
ENERGIÀ



RIS3CAT Energia
@energia_ris3cat

Comunitat RIS3CAT per a la millora de la competitivitat catalana a través d'un sistema energètic més sostenible i eficient

 



RIS3CAT Energia @energia_ris3cat · 4 de nov. de 2021

#InnovationDayEnergia ! ! Obrim el call a solucionadors ! !

- empreses han llançat reptes
- entitats donaran solucions

Envia la teva solució abans del 10 Nov 2021

xre4s.cat/activities/inn...

Organitzen @Xre4S @clusterEE @energia_ris3cat

#FEDERrecerca #fonsUEcat



INNOVACIÓ
INNOVATION DAY ENERGIA

25 de novembre | 9 h
Online

 

➤ **Public activities and events:**

RIS3CAT Intercommunities Forum held on 06th November of 2017



2. Inclusion of innovative elements

The COSIN Project has made it possible to implement a technological solution that obtains a new renewable gas with properties and quality compatible with the uses of natural gas. Being a gas of renewable origin, it is called synthetic natural gas. Hence the name of the Synthetic Fuels project (COSIN).

To do this, three technological modules have been developed and integrated into a pilot plant at the Riu-Sec sewage treatment plant installations in Sabadell (Barcelona), as a demonstrator. This is the first plant with these characteristics in Catalonia.

This includes a first system that processes the sludge from the sewage treatment plant to produce biogas (renewable gas). The second module filters, purifies and enriches this gas to obtain another gas composed almost entirely of methane, with qualities which can be compared to natural gas injected into the grid for distribution and consumption in homes and businesses.



For the NAenCAT project, management tools have been developed to enable a controllable and measurable electricity grid.

The project has been validated in the form of a demonstrator in a pilot plant implemented at the Electra Caldense facilities in Caldes de Montbui (Barcelona), with the creation of a smart grid that increases the efficiency of the electricity grid, improves the quality of service and enables a more immediate response thanks to its greater fault detection capacity.

For this purpose, three lines of technological development have been carried out: the first, focused on the deployment of a system of sensors adaptable to distributed automation (communication equipment that facilitated the sending of information between sensors); the second focused on extending the remote control capacity (facilitating the sending of information between sensors and control centres); and the third, consisting of an innovative solution for distributed automation itself.

Moreover, advanced algorithms have been implemented to enable the possibility of converting the data generated by the systems into useful information and to facilitate efficient management with a higher degree of optimization.

3. Relevance of the results to the objectives pursued

The RIS3CAT Energy Community, especially the project presented here, aims to boost the energy sector in Catalonia through a cooperation process to achieve proper knowledge transfer and coordination between the different components of the Community, of which COSIN and NAenCAT projects are part.

In achieving these objectives, the role of IREC- Catalonia Institute for Energy Research, which facilitates the task of coordinating the different projects of the Energy Community, should be highlighted.

The COSIN project provides an opportunity to scale up the solution and displace some of the fossil-based natural gas currently consumed, thus contributing to the development of a more sustainable energy system.



Regarding NAenCAT, it has been observed how the technologies developed have made it possible to provide the electricity system with greater intelligence for greater optimization of its management.

The NAenCAT project offers the possibility of scaling up the solution in the medium term with the ultimate goal of making Catalonia's electricity grid a more optimized and intelligent one.



4. Contribution to the resolution of a regional problem or weakness

The problem with the Catalan energy sector is that it presents a fragmented structure and a lack of cooperation between agents, to the extent that important entities such as large service companies, SMEs, technology centres and universities are not accustomed to working together on R&D&I projects.

The Energy Community and the projects included in its Action Plan have boosted this cooperation and fostered the implementation of major projects and pilot programmes that benefit the region.

In the case of the COSIN project, 7 entities from the Catalan industrial fabric have collaborated effectively, including companies from the energy sector, components, research centres and a university. Due to its development, scientific and technological contributions with high added value have integrated and have materialized in the pilot plant at the Riu-sec sewage treatment plant in Sabadell and, with it, the synthesis of fuel of renewable origin has been achieved, replacing natural gas of fossil origin.

In the case of the NAenCAT project, 6 entities from the Catalan industrial fabric have successfully collaborated, including electricity distributors, developers of automated monitoring infrastructure, suppliers of medium voltage equipment, control of electricity generation and distribution grids, as well as a research centre.

The result of their joint activity has resulted in the implementation of valuable solutions with high added value that have materialized in the pilot plant of the Electra Caldense distribution grid in Caldes de Montbui (Barcelona). This allows the technical feasibility of a smart grid, a more optimized and efficient one, to be verified.

Therefore, the two projects have enabled collaboration between different agents to achieve R&D and innovation projects in each case.

5. High degree of target population coverage

The Community's target audience is the Catalan energy sector, which encompasses companies based in Catalonia and the innovation system.

The COSIN Project is designed to improve the competitiveness of the energy sector itself, as well as society as a whole, given the decarbonisation potential that the materialized solution enables by proving a new fuel, similar to fossil natural gas, but of renewable origin. Given that the energy sector is universal, a high degree of coverage of the advances achieved through the COSIN project is expected.

With regard to NAenCAT, the project is designed to boost the competitiveness of the energy sector itself, as well as a more optimized use of any consumer due to the technologies developed and implemented. Given the importance of the energy sector and its universal nature, a high degree of coverage of the advances achieved through the NAenCAT project is foreseen, as the technologies developed in the project are expected to be installed on a massive scale to help optimize the electricity grid in Catalonia.

6. Inclusion of horizontal principles (sustainable development, equality between men and women, and non-discrimination) and of environmental regulations

The technologies developed by the COSIN project include activities in energy and natural resources management, water cycle management, recycling and waste treatment. In particular, it includes technologies with high added value and innovative content such as the *biogas enrichment (upgrading) system*, *methanation* (process to produce synthetic methane) and *electrolysis* (separation of components by electricity).

The project also complies with the principles of sustainable development and environmental regulations, as these technologies allow the manufacture of new synthetic fuels from sewage sludge, the reuse of carbon dioxide and water.

The project is a clear example of circular economy, as the use of biomethane and syngas from renewable sources helps to reduce greenhouse gas emissions by displacing the consumption of fossil natural gas.



Furthermore, the COSIN Project is part of the *Power-to-Gas* concept, which is based on converting and storing excess electricity from renewable sources, such as photovoltaic and wind, into renewable natural gas. The implemented solution paves the way for large-scale renewable energy storage with a strong positive environmental and economic impact.

The NAenCAT Project has a general scope with positive effects for the entire population regardless of age, gender, place of residence, etc. The essence of the project is based on facilitating the deployment of a more efficient and optimized electricity grid, thereby contributing to the benefit of the entire population in whose territory the technologies developed can be implemented. In terms of environmental sustainability, there is no doubt that the existence of better electricity distribution grids helps to minimize their impact in this area and supports the fight against climate change. The project has also prioritized the use of existing infrastructures, resulting in economic savings and reducing the environmental impact of their deployment.

Both the COSIN and NAenCAT projects aim to promote equality between men and women in the still unbalanced field of technology. In fact, in all their proposals we can find a high prevalence of women. In addition, all the members of the project declare that they comply with the obligation to respect equal treatment and opportunities in the workplace, non-discrimination and accessibility for disabled people, for which they adopt measures aimed at avoiding any type of discrimination in the workplace.

7. Synergies with other policies or public intervention tools

These projects are part of a wider effort by the Energy Community, which carries out other projects such as REFER, ESTORELOT, FLEXEDINET, LCA ENERBOOST and MICRO IT, that are complemented by cross-cutting and support activities.

The RIS3CAT Energy Community was originally conceived as an extra tool to promote the energy sector in the R&D ecosystem and qualify for more financing through other instruments.

In the case of projects that fell outside the framework of REFER due to the constraints of the call for proposals, the solution was to seek better-matched alternatives to carry out the actions, either

locally, with ACCIO's technology R&D nuclei funding scheme, or nationally, with tools created by the Centre for the Development of Industrial Technology (CDTI).

Likewise, opportunities offered by the European programmes H2020 and Interreg (European interregional cooperation programme) have been exploited, such that several partners are already participating in European projects with technologies or lines of work that complement those developed within the framework of the RIS3CAT Energy Community, which allows synergy with other European programmes to develop solutions and promote R&D&I projects throughout the European territory.



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