

Una manera de hacer Europa



BUENAS PRÁCTICAS

Actuaciones Cofinanciadas

MERCAVE - Automatic Variable Gauge System for Freight Rail Traffic

ADIF

**Programa Operativo
Plurirregional de España**

Año 2022

Fondo Europeo de Desarrollo Regional

Project "MERCAGE - Automatic Variable Gauge System for Freight Rail Traffic"

The Administrador de Infraestructuras Ferroviarias (ADIF) is a Spanish public company located in Madrid, Spain. ADIF is a public law entity according to the definition outlined in Article 2.1.4 of Directive 2014/24/EU of the European Parliament and the Council, dated February 26, 2014.

The project "MERCAGE - Automatic Variable Gauge System for Freight Rail Traffic" is an initiative with a total budget of 10,000,000.00 euros, co-financed at 64% by the European Regional Development Fund (FEDER) (6,400,000.00 €) through the financial path assigned to the General Secretariat of Innovation of the Ministry of Science and Innovation in the Multi-regional Operational Program of Spain (POPE) 2014-2020, within the line of Promoting Innovation from Demand and Public Procurement of Innovation (FID-CPI) for the development and/or acquisition of innovative products or services by public buyers through CPI.

The overall goal of MERCAGE is to address the need for freight trains to operate interchangeably on the "Iberian" and "standard" gauges. The "Iberian" gauge is the track width used in Spain and Portugal (1,668mm), and the "standard" gauge is the width used in the rest of Europe (1,435mm). To achieve this, freight trains equipped with variable gauge axles and gauge changers on the track are required, technologies that do not yet exist in the market.

In this best practice, we present the project "MERCAGE - Automatic Variable Gauge System for Freight Rail Traffic," which is an example of cooperation and the enhancement of innovative development capabilities with the support of FEDER. It is considered a best practice because it meets the designed criteria:

1. The action has been adequately disseminated among the beneficiaries, potential beneficiaries, and the general public.

All initiatives launched under the project "MERCAGE - Automatic Variable Gauge System for Freight Rail Traffic" comply with the information and communication obligations as beneficiaries of FEDER:

On the ADIF institutional website, a section dedicated to actions co-financed with Structural Funds has been created, which directs visitors through a link to specific information about the project, its co-financing by FEDER, and its alignment with the programming of the said Structural Fund.

On the ADIF institutional website's homepage, the European Union logo has been included (visible without the need to scroll). Clicking on it leads to the mentioned section of co-financed actions with Structural Funds.


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- INFORMACIÓN GENERAL
- PERÍODO 2021-2027
- PERÍODO 2014-2020
- PERÍODOS HASTA 2006 Y 2007-2013
- PLAN DE RECUPERACIÓN, TRANSFORMACIÓN Y RESILIENCIA

Período 2014-2020

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En el periodo 2014-2020 están previstas ayudas por valor de 383,7 millones de euros. El Fondo Europeo de Desarrollo Regional (FEDER) a través del [P.O. Pluri regional de España 2014-2020](#) aporta 278,6 millones de euros, que se desglosan en 270,4 millones de euros que corresponden a las ayudas al Objetivo Temático 7: Transporte sostenible, 3,2 millones de euros al Objetivo Temático 4: Economía baja en carbono y 5,0 millones de euros al Objetivo Temático 13: Asistencia técnica. Y el Mecanismo "Conectar Europa" de la Unión Europea (CEF) que aporta 105,1 millones de euros. Para este periodo Adif también tiene concedidas unas ayudas FEDER por importe de 7,5 millones de euros. De estas ayudas, 6,4 millones de euros son gestionadas por el Ministerio Ciencia e Innovación (MCIN) y están destinados para el proyecto MERCAGE dentro del Objetivo Temático 1; y 1,1 millones de euros por el Instituto de Diversificación y Ahorro de Energía (IDAE) para proyectos de I+D+i en el Objetivo Temático 4. [Ver información de financiación en I+D+i](#)

innovacion ligados a la interoperabilidad ferroviaria tambien hay opciones de captar fondos LEF (Mecanismo Conectar Europa).

Los siguientes proyectos cuentan también con financiación de fondos FEDER de la Unión Europea y del Ministerio de Ciencia, Innovación y Universidades:

MERCAVE

Línea de Fomento de la Innovación desde la Demanda para la Compra Pública de Innovación (LÍNEA FID-CPI). Sistema de ancho variable para tráfico de mercancías (expediente CPI-2019-37-1-MER-04).

El proyecto **MERCAVE** - Sistema de ancho variable automático para tráfico de mercancías por ferrocarril tiene un presupuesto de diez millones de euros con una cofinanciación FEDER de un 64%, por tanto, el Fondo Europeo de Desarrollo Regional (FEDER), a través del Ministerio de Ciencia e Innovación, como Organismo Intermedio del Programa Operativo Plurirregional de España 2014-2020 – POPE realiza una aportación de seis millones cuatrocientos mil euros. Objetivo Temático 1: Potenciar la investigación, el desarrollo tecnológico y la innovación.

El Ministerio de Ciencia e Innovación gestiona la Línea de Fomento de Innovación desde la Demanda (FID), y otorga cofinanciación, con cargo a fondos FEDER a entidades del sector público para llevar a cabo operaciones de CPI. Para ello se realizó una convocatoria abierta al sector público el mes de septiembre de 2019. El proyecto propuesto por Adif a esta convocatoria fue seleccionado por el Ministerio y el 28 de diciembre de 2020 se firmó el convenio para el proyecto Sistema de ancho variable para tráfico de mercancías (Mercape).



FONDO EUROPEO DE DESARROLLO REGIONAL (FEDER)
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DINPAC3D

EBR

Specific page on European R&D&I funding

An informative sign displaying FEDER co-financing has been installed in Cordoba, specifically at the location of the gauge changer.



Sign at the gauge changer site

All procurement documents include information regarding FEDER co-financing.



L9_AF.06-COFINANCIADO



de ser comprobada mediante el código según de verificación: PP7W48HIV6NYC5ZWM9E2J81TG
www.adif.es

Fondo Europeo de Desarrollo Regional (FEDER), Objetivo Temático 7: "Conseguir un transporte sostenible".

ENTIDAD PÚBLICA EMPRESARIAL ADMINISTRADOR DE INFRAESTRUCTURAS FERROVIARIAS

CONTRATO TIPO DE SUMINISTROS Y SERVICIOS
(Ley 9/2017, de Contratos del Sector Público, de 8 de noviembre)

PARTES CONTRATANTES	
ENTIDAD PÚBLICA EMPRESARIAL ADMINISTRADOR DE INFRAESTRUCTURAS FERROVIARIAS	ADJUDICATARIO: Ingeniería y Técnica del Transporte TRIA S.A.
OBJETO DEL CONTRATO	
Contrato nº: 3.21/49110.0089- INN 003/21 PROYECTO MERCAVE. COMPRA PÚBLICA DE TECNOLOGÍA INNOVADORA DE EJES DE ANCHO VARIABLE DE MERCANCÍAS, INCORPORANDO INNOVACIÓN, FABRICACIÓN, SUMINISTRO Y PUESTA EN SERVICIO.	
PRECIO DE ADJUDICACIÓN Y ANUALIDADES	

Use of logos in procurement documents
(contrataciondelestado.es/wps/poc?uri=deeplink%3Adetalle_licitacion&idEvl=U8fjLAfcGLWrz3GQd5r6SQ%3D%3D)

Condiciones de Licitación

Programas de Financiación: Financiación con fondos de la UE

Selección de Programas de Financiación: Proyecto cofinanciado por Fondo Europeo de Desarrollo Regional (FEDER) a través PO Plurirreg de España 2014-20. Obj. Temático 1: Promover la investigación, el desarrollo tecnológico y la innovación

Requisitos de participación de los licitadores

Solvencia Requerida

Según lo indicado en el Pliego de condiciones particulares

Criterio de Solvencia Técnica-Profesional

Otros - Según lo indicado en el Pliego de condiciones particulares

Criterio de Solvencia Económica-Financiera

Otros - Según lo indicado en el Pliego de condiciones particulares

Communication of financing conditions in the PCSP (Pliegos, contrataciondelestado.es)

Supplies acquired within the framework of the MERCAVE project have been suitably labeled in accordance with advertising standards.



Hopper wagon acquired for the installation of Variable Gauge Axle (EAVM)

Furthermore, both initiatives have been promoted through other communication activities. Some of the most relevant ones include:

Throughout the project's development, events and institutional acts were held with digital media coverage, highlighting the funding line and support received from FEDER. Below is a brief list of activities and public events of interest:



- MERCAVE project stand at the s-moving fair (September 21 and 22, 2022)



- MERCAVE project sign at the final event (June 16, 2023)

During the project, **videos** were produced and disseminated through digital media, emphasizing the funding line and FEDER support, with extensive outreach to the general

Photogram of the produced video

2. The action incorporates innovative elements.

The MERCAVE project has introduced highly relevant innovative aspects in its development and results.

Improvements and real tests have been carried out on a complete ADIF train with wagons equipped with the Variable Gauge Axle to optimize knowledge in the areas of maintenance and daily commercial operation of this new axle.

Enhancements and new features have been developed for the Variable Gauge Changer for freight, resulting in a changer with a shorter length, lower implementation cost, and reusability and transport capacity.

Finally, initial steps have been taken in assessing the technical feasibility of applying the

variable gauge axle to a freight locomotive.

3. Alignment of the results obtained with the established objectives.

The overall objective is to make the system available to equip all ADIF rolling stock with this system to enhance efficiency for its infrastructure management competences.

The global objective of this project was to address the need for freight trains to operate interchangeably on the "Iberian" gauge, the track width used in Spain and Portugal (1,668mm), and the "standard" gauge, the width used in the rest of Europe (1,435mm). To achieve this, freight trains equipped with variable gauge axles and track changers, technologies that do not yet exist in the market, are required to facilitate the transportation of goods between these two gauges without the need to construct new mixed-gauge tracks, which are costly and reduce line capacity and speed.

Additionally, the knowledge and technology developed and brought to the market will enable its use by operators and infrastructure managers. Consequently, ADIF may eventually decide not to deploy the alternative of a third rail at the gauge changeover points and instead install freight changers at these points.

The obtained results confirm the expected improvements: there is a new variable gauge freight axle (EAVM 2.0) available for both small wheels (760mm) and large wheels (920mm), along with a fixed gauge changer and a portable one, both fully functional, for testing and validation of equipment fitted with EAVM 2.0 axles. The chosen location for the construction of the new infrastructure is the former Cordoba Gauge Changer (Cordoba).

Variable gauge freight axles are available for both small wheels (760mm) and large wheels (920mm).

Through project execution, 100% of the initially proposed objectives were achieved thanks to the active collaboration of all ADIF departments and the awarded companies.

4. Contribution to addressing a detected problem or weakness in the territorial scope of implementation.

While the project's development has had an impact on the efficiency and competitiveness of ADIF by incorporating new technologies into its internal operations in the Andalusian territory, the project's results have addressed the main problem and opened the opportunity for operators to incorporate these technologies in the future, offering a range of economic advantages. Thanks to this new technology, trains can cross borders with different track gauges without the need to change cargo between trains, which previously slowed down transportation and increased costs.

It is worth noting that rail transport is the most efficient and environmentally friendly mode of transport available, making it the most sustainable option.

The results of this project lay the foundation for increasing the use of rail transport for freight,

reducing the reliance on road transport, which contributes to decarbonizing the economy and combating climate change.

5. High degree of coverage for the target population.

The project's development has brought significant benefits to ADIF and, consequently, to all users of the railway system, including not only rail operators but also companies in need of transporting goods. In addition to these groups, it has also benefited the general public by contributing to road network congestion relief and supporting the fight against climate change.

It is worth noting that several international governments have shown interest in the project, demonstrating the considerable interest in this technology.

Lastly, the project allowed the awarded companies to enhance their competitiveness in the market by accessing new knowledge for developing new products and services within the contract framework.

6. Consideration of horizontal criteria for equal opportunities, non-discrimination, social responsibility, and environmental sustainability.

ADIF has ensured that the entities involved in the project have considered the qualification and training of individuals regardless of any prejudice or distinction, focusing on the richness, value, and dignity of individuals. To achieve this, social criteria were taken into account in the contract execution conditions, including:

- a) Employing a fixed workforce percentage equal to or greater than 20% in the contract execution.
- b) Employing a percentage of female workers that, among the total new jobs created, is equal to or greater than the national average in the corresponding sector, provided that the labor market's availability in that sector allows.
- c) Employing a percentage of disabled individuals equal to or greater than 1% in the contract execution, provided that the labor market's availability in the sector allows.
- d) Strictly complying with labor safety regulations in the execution of work. Without prejudice to other responsibilities for violating these rules, this contract will be considered fundamentally breached if, during the execution of the contract and within one year, the Labor Authority imposes two very serious sanctions for violating labor safety regulations.

The contract administrators closely monitored the implementation of these measures, and no breaches were observed at any point by the awarded companies and subcontractors.

ADIF has a GENDER EQUALITY PLAN (updated in June 2019) with various measures aimed at ensuring that personnel are aware of gender inequality issues in the organization and the different ways to address them. While the project management closely monitored the plan's

implementation where applicable, it's worth highlighting the following measures:

- **ACCESS TO EMPLOYMENT:** The use of non-sexist language was promoted in all project-related documentation, including the development of software applications.
- **TRAINING, INFORMATION, AND AWARENESS:** All participants in the project on ADIF's part attended training and awareness courses on equal treatment and opportunities for women and men and on gender-based violence.
- **WORKING HOURS, WORK-LIFE BALANCE, AND PERSONAL AND FAMILY RESPONSIBILITY:** Project management considered the work-life balance of both UM personnel and awarded company employees, promoting telecommuting and increasing the use of virtual meetings, always scheduled to facilitate work-life balance.

In terms of environmental sustainability, ADIF has a 2030 Strategic Plan that highlights its commitment to corporate responsibility. As seen in other sections of this document, the positive impact of this project on the environment is undeniable.

7. Synergies with other public policies or intervention instruments.

The project and its results align with policies promoted by the European Commission, as it is a priority for achieving Sustainable Development Goals (SDGs).

Furthermore, the MERCAVE project aligns with numerous national policies, such as the Spanish Logistics Strategy (Ministry of Development, 2013); the Plan to Promote Freight Transport by Rail 2017-2023 (Ministry of Transport, Mobility, and Urban Agenda, 2017); and the Innovation Plan for Infrastructure and Transport 2018-2020 (Ministry of Transport, Mobility, and Urban Agenda).

Ultimately, the project aligns with the FEDER Operational Program of Andalusia's objective to Consolidate the regional R&D system, promoting public and private investment and fostering collaboration among the agents within this system.

