CAMPUSINDUSTRIAL

Research Lines and Capacities

Specialised in smart industry and advanced manufacturing

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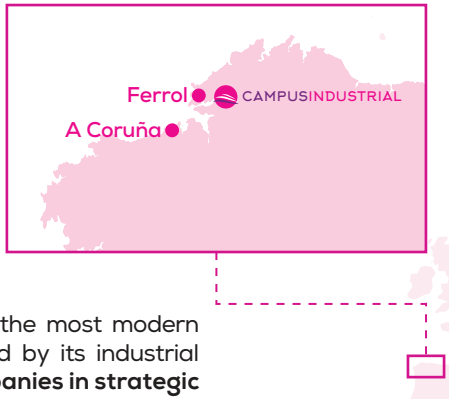
UNIVERSIDADE DA CORUÑA

The Ferrol Industrial Campus



The **Ferrol Industrial Campus** (CIF) is part of the University of A Coruña and it is the **first specialisation campus accredited by the Xunta de Galicia.** As part of the University, our purpose is to create, manage and disseminate culture and scientific, technological and professional knowledge by teaching, researching and stimulating knowledge transfer.

Located in the city of Ferrol, an international benchmark in shipbuilding with the most modern shipyards in Europe, the Ferrol Industrial Campus is growing in a city marked by its industrial character, which represents **an opportunity for collaboration with driving companies in strategic industrial sectors** such as the naval, maritime, logistics, industrial, metal-mechanical, textile and automotive sectors, among others.

We are focused on smart industry and advanced manufacturing

As a specialisation campus, we have **differentiated teaching and research** that focus on **6 fields** linked to the pillars of the factory of the future, a human-centered smart industry:

- Industrial Robotics
- Materials
- Optimisation of Industrial Processes
- Naval and Offshore Engineering
- Industrial Management
- Product Development

The Ferrol Industrial Campus promotes quality interdisciplinary research in these fields, aiming to make a greater impact on the business community and society. Our purpose is to be at the forefront of technological development and innovation, especially in the fields of smart industry and advanced manufacturing, addressing global challenges as well as adapting to local specifications nationally and internationally. To achieve this, we are committed to investing in human capital and attracting high-level researchers, providing state-of-the-art scientific equipment and strategic alliances.

On-demand industry solutions

Since its strategic conception, the Ferrol Industrial Campus has demonstrated its strong commitment to the business network: one of its main objectives has been to foster relations between industry and research, promoting the transfer of science and technology from the university to the business sector and to society in general.

Fields and lines of research at the Ferrol Industrial Campus

Industrial Robotics

Designing and integrating robotic systems into the production line
Aerial robots, robot manipulators, and robotic systems for surface functionalisation

Sensorisation, automatisms and control
Sensory fusion, low-level control, smart control and integration of optical sensors

Materials

Manufacturing technologies
Especially additive manufacturing in plastic and metal

Circular economy of materials
Sustainable materials

Functional materials
Especially polymer composites and functional biopolymers for different applications
Thermal, mechanical and rheological formulation and characterisation of materials

Optimisation of Industrial Processes

Modelling and simulation of industrial processes-digital twin

Energy efficiency and environmental impact of industrial processes

Advanced sensorisation technologies in industrial processes

Industrial tools and technologies applied to healthcare

Smart management of the production line and logistics

Naval and Offshore Engineering

Shipbuilding and offshore processes
Modelling, simulation and optimisation of manufacturing processes and new materials, IoT, digital twin, etc.

Naval and oceanographic hydrodynamics

New solutions in the maritime sector
Safety, energy efficiency, autonomous underwater vehicles (AUV), robots, UAV inspection, etc.

Marine renewable energies

Plant information management (digitalisation)

Emergency management

Human resource management - industrial heritage, leadership and technological change

Industrial Management

Scientific creativity and technological innovation

Sustainable and socially responsible industrialisation

Development of industrial products
Design (machines, vehicles, robots and mobile systems) and product life cycle

Product Development

Product design
Product conceptualisation and design engineering services

Research and scientific production numbers

130+ ASSIGNED RESEARCHERS	61% PERMANENT RESEARCHERS	20% NON-PERMANENT RESEARCHERS	17% RESEARCHERS IN TRAINING

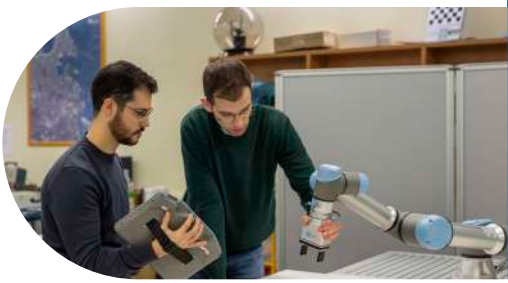
(2018-2021)

1 RESEARCH CENTRE	117 BOOKS / BOOK CHAPTERS
59 THESES DEFENDED	17 PATENT APPLICATIONS
23 THESES IN PROGRESS	3 SOFTWARE REGISTRATIONS
323 CONTRIBUTIONS IN CONFERENCES	73 RESEARCH PROJECTS AND STRUCTURAL GRANTS
728 ARTICLES IN JOURNALS	€5.8M+ IN RESEARCH PROJECTS AND STRUCTURAL GRANTS

Groups, laboratories and research units

Assignment to the specialisation campus is done on an individual level. For this reason, the CIF includes researchers assigned to the research groups and units listed below as well as individual researchers.

Industry 4.0 and Advanced Manufacturing



Groups:

- Integrated Group for Engineering Research (GII)
- Polymers Group
- Project Management and Engineering Group (GRIDP)
- Thermal Systems and Heat Transfer (SISTER)
- Differential Geometry and its Applications (XDA)
- Industrial Laser Applications Laboratory (LAIL)
- Science and Cybernetics (CTC)
- Thermal and Rheological Properties of Materials (PROTERM)
- Mechanical Engineering Laboratory (LIM)
- Structural Analysis Laboratory (LAE)
- Materials Engineering and Science (CIM)
- Mixed Engineering Group (GEM)

Research units:

- Marine Innovations (GIIM)

Laboratories:

- Plastics Laboratory
- Fuels Laboratory

Other fields

- Observatory of Design and Innovation in Mobility, Means of Transport and the Automotive Industry (ODIMTA)
- Cardiovascular Research Group (GRINCAR)
- Health and Podiatry Research Group (GISAP)
- History, Archaeology, Documentation and Culture (HADOC)
- Modelling and Model Resolution Group (GMRM)
- Economic Development and Social Sustainability (EDaSS)
- Research Group for Multidimensional Corpus-Based Studies in English (MuStE)
- Philosophy and Methodology of the Artificial Sciences (FMCCA)
- History of Architecture Research Group (IALA)
- Criminology, Legal and Forensic Psychology in the 21st Century (ECRIM)

R&D transfer and relations with companies

The ultimate objective of the research carried out at the Ferrol Industrial Campus is to transfer the results and knowledge achieved to the business community and society.

Therefore, we collaborate with entities from different sectors, especially in the industrial, naval, metallurgical, logistics, textile, automotive or health sectors, which seek to improve their competitiveness and their products, services and processes by incorporating innovative solutions.

Services and collaboration fields

Tailored research and technical assistance: providing access to the specialised knowledge of our researchers through contracts or agreements for the provision of scientific and technical services, tailor-made projects, access to infrastructures for testing, process modelling, or analysis of samples and materials, etc.

Collaboration on **applied research projects**, usually by applying for national or international funding calls.

Technology portfolio: patents and software registrations. Opportunity to obtain an exploitation licence through technology licensing agreements.

Spin-offs: Investment opportunity in companies created by researchers from the Industrial Campus.

Institutional and Business Chairs: long-term relationship between the university and external companies and institutions, both public and private, as a way of promoting patronage activities or corporate social responsibility actions in order to develop training, dissemination, knowledge transfer or research activities in fields of common interest.

Industrial doctorates: collaborating with companies on the management of doctoral projects applied to industry.

Continuous training: tailored courses designed specifically to meet business needs and related to the fields of specialisation of the Campus.

Knowledge transfer results

114 CONTRACTS AND PROJECTS
2018-2021

€1.2M TOTAL AMOUNT OF CONTRACTS
2018-2021

75+ CLIENTS
2018-2021

5 INSTITUTIONAL AND BUSINESS CHAIRS

Successful knowledge transfer example

UMI ASTILLERO 4.0

Joint Research Unit Navantia-UDC

Shipyard 4.0. The Shipyard of the Future

The UDC-Navantia Joint Research Unit was set up in 2015, with the financial support of the **Galician Innovation Agency (GAIN)**, to initiate a deep transformation process aimed at the sustainability of Navantia (Spanish state-owned shipbuilding company), with the introduction of Industry 4.0 concepts and technological innovation in its factories.

Researchers from the **Ferrol Industrial Campus and other centres of the University of A Coruña** supported the technological innovation needed for this transformation.

For the 6 years of the JRU (2015-2021), the main fields of research were: **process optimisation, product optimisation and ICT integration**.

The experience provided by the Joint Research Unit led to the identification of new technological development needs and the strengthening of the collaboration between Navantia and the University of A Coruña. It also worked as a driving force regarding a multitude of companies and SMEs collaborating on the project.

€4.8M **368,000+** HOURS **154** RESEARCHERS **2** PATENTS/ SOFTWARE REGISTRATIONS

16 LINES OF RESEARCH **95+** PUBLICATIONS **1** TECHNOLOGY TRANSFER AWARD **11** COLLABORATING ENTITIES

UNIVERSIDADE DA CORUÑA

CAMPUSINDUSTRIAL

XUNTA DE GALICIA

Making the industry of the future a reality from Ferrol

Dr Vázquez Cabrera St. (Unnumbered), 15403 Ferrol (Spain)

www.bit.ly/campusindustrial

campus.industrial@udc.gal | +34 981 16 70 00

NOV-2022