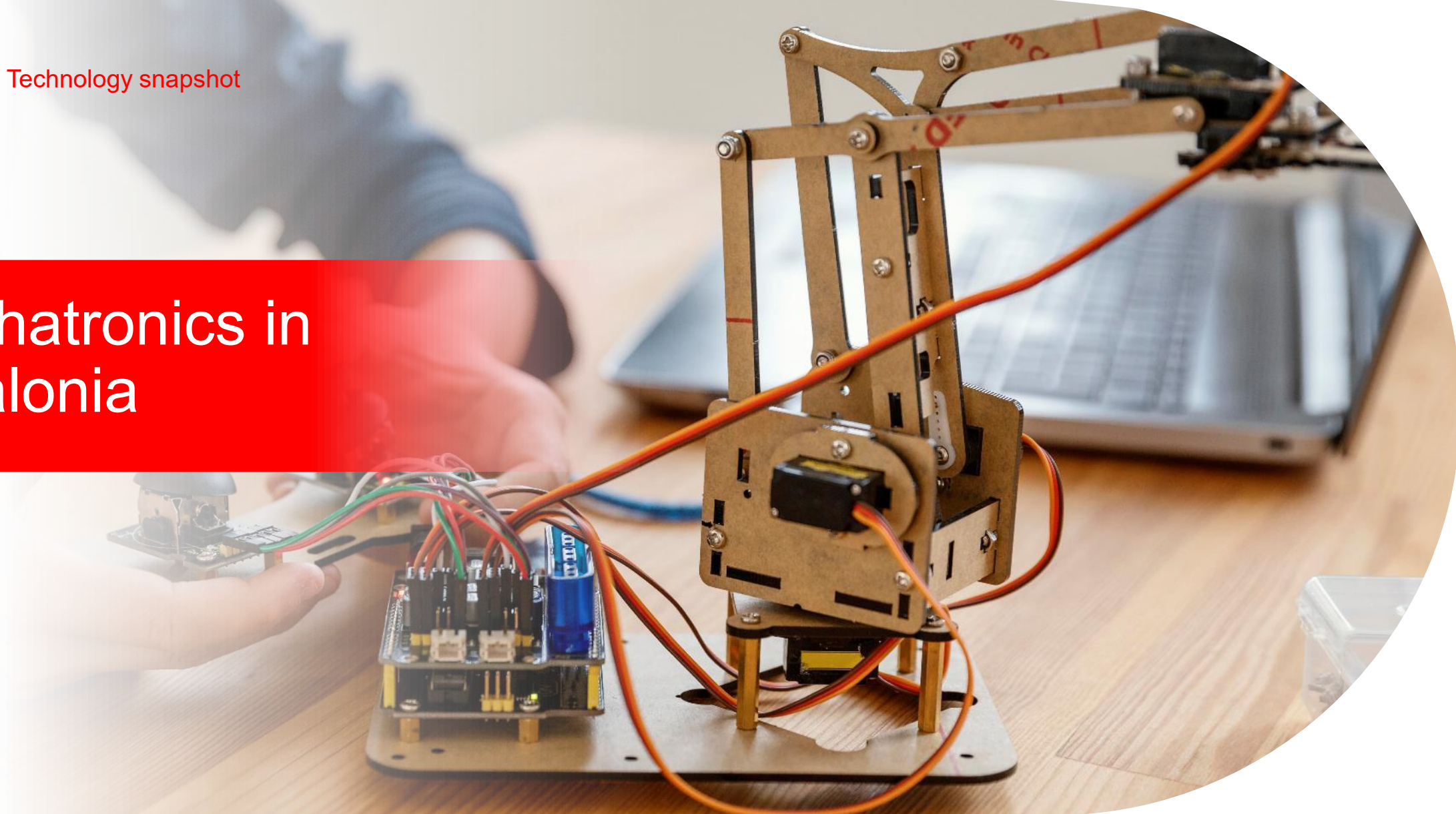


March 2026. Technology snapshot

Mechatronics in Catalonia



Mechatronics in Catalonia. Technology snapshot

ACCIÓ

Generalitat de Catalunya (Government of Catalonia)



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Prepared by

ACCIÓ Strategy and Competitive Intelligence Unit

Barcelona, March 2026

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1. Introduction to mechatronics

What is mechatronics?

*“**Mechatronics** is the synergistic combination of precision mechanical engineering, electronics, automatic control and systems for the design of products and processes” J. A. Rietdijk.*



Mechatronics and its importance for industry

- **Mechatronics** is a discipline that **combines mechanics, electronics, computer science and automatic control with the aim of designing and improving intelligent and automated systems**. This integration allows the development of industrial robots, automated production lines and advanced systems used in sectors such as robotics, automotive, aeronautics, biomedicine and Industry 4.0. The discipline is broad and versatile, and includes programming, embedded systems, sensors, actuators and process control, which requires professionals with analytical and creative skills and an interdisciplinary vision.
- **Mechatronics is important for industry** because it allows the **integration of technologies such as mechanics, electronics, automatic control and computing to automate and optimise production processes**, create intelligent machinery and robots that improve the efficiency and functionality of products and production lines and respond to the needs of industrial companies. Mechatronics is, therefore, a key discipline for competitiveness and industrial innovation.

Contribution of mechatronics to industry

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Industrial robotics, cobots and process automation

The design of industrial and collaborative robots and automated systems that make possible the **optimisation of production, handling and assembly**. The integration of advanced analytics systems such as CNC, sensors and process equipment allows the **reduction of unplanned downtime and costs**.



The integration of **electronic systems** allows the development of **products that are able to adapt** to the needs of each user through **sensors and controls**.

Development of smart products



Synergy between mechanics and electronics

Functional **coordination** between the different **electronic and mechanical elements** that intervene in the system as a whole to ensure **stable and reliable operation**.



The **integrated design** of the product improves performance from the point of creation to the maintenance and updating of the system. It focuses on **reliability and functionality**.

Improving the life cycle and functionality of products



Main application sectors of mechatronics

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Automotive



Machinery, equipment and robotics



Aeronautics and space technologies



ICT and electronics



Logistics and packaging



Food and beverages



Metallurgy



Chemicals and plastics



Life sciences



Textile and fashion

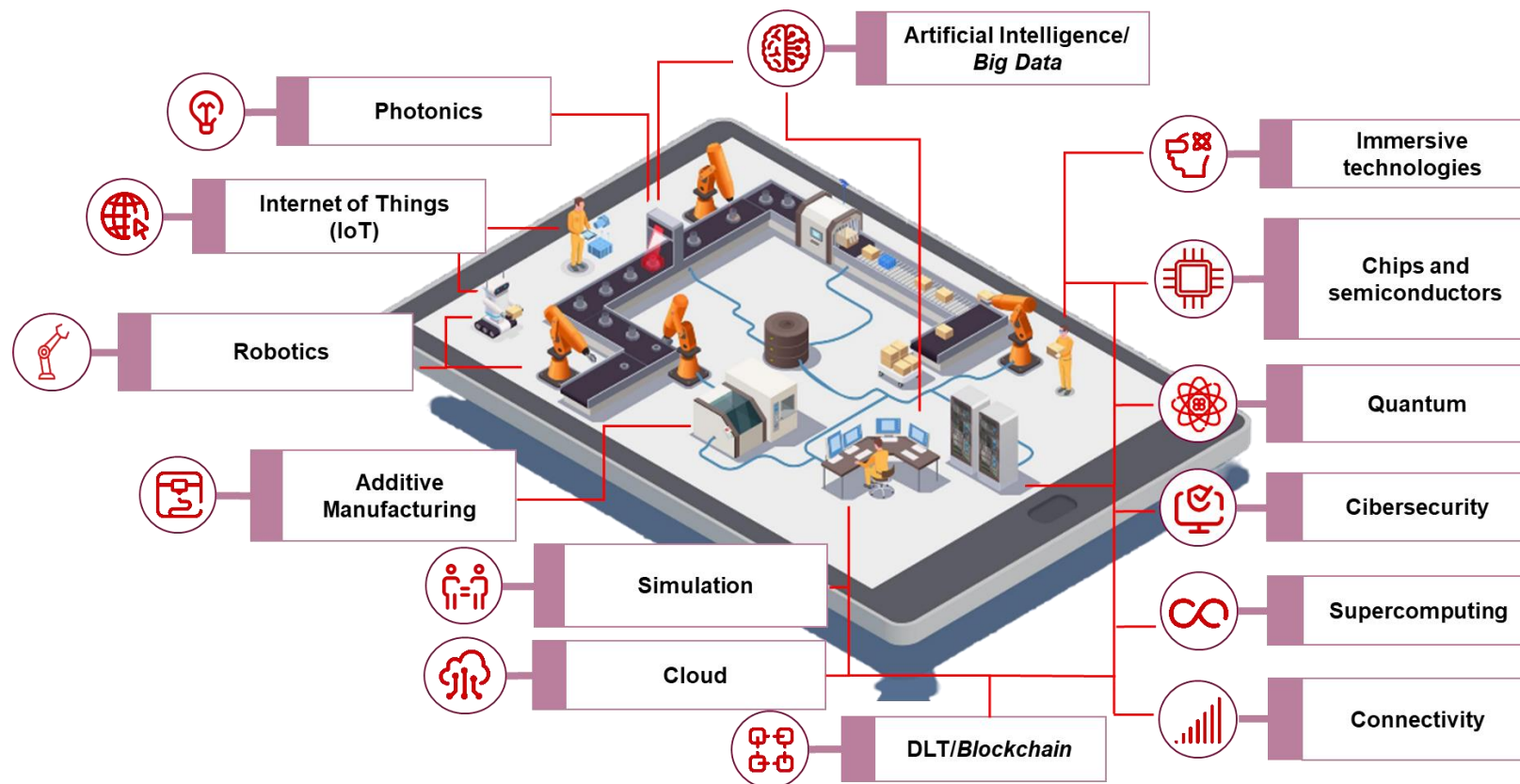
Industry 4.0, catalyst for mechatronics

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Industry 4.0 is the convergence and application of technologies, especially digital ones, to transform the design, manufacturing, operation and service of production systems.

MECHATRONICS constitutes the physical and intelligent basis of industry 4.0, and integrates mechanics, electronics, control and software to create automated, interconnected industrial systems capable of optimising themselves autonomously.



2. Global mechatronics market

Global mechatronics market

The global mechatronics market reached **US\$52.7 billion in 2024** and is expected to reach **US\$118.2 billion in 2033**.

The industry is expected to grow by **10.7% annually** during the period **2024-2033**.

Key factors driving market growth:



Integration of **electronics and mechanics**



Needs of **precision manufacturing**



Growth of **automation** and **IoT**

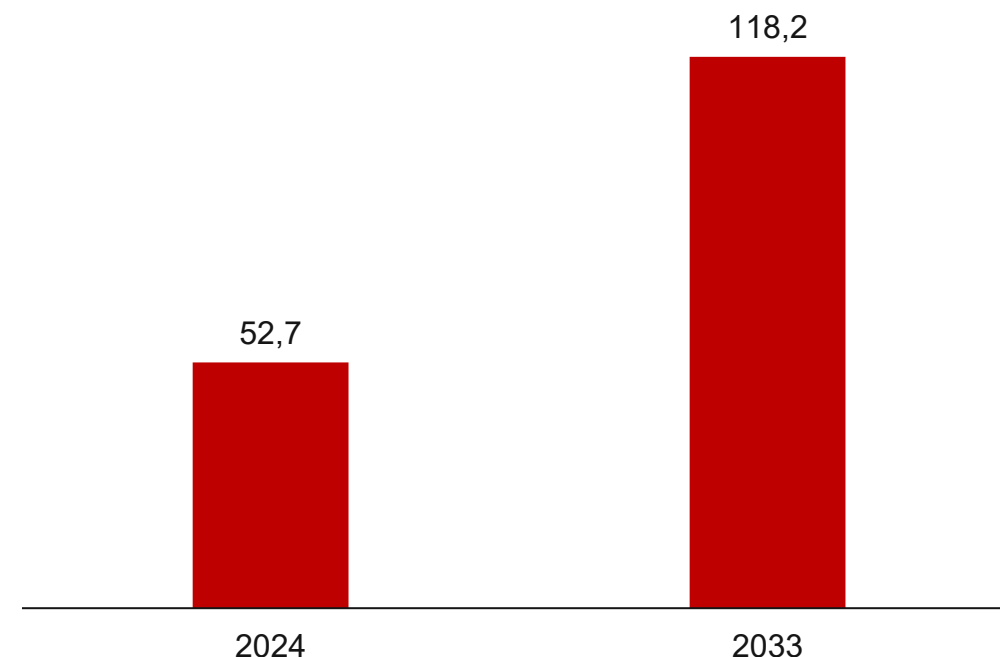


Demand for **intelligent machinery**

Value analysis, global mechatronics market

(2024-2033, billions of dollars)

10.7%



Source: HTF Market Intelligence

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World leading companies in mechatronics

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 With a presence in Catalonia

Industrial and collaborative robotics



Industrial automation and control



Mechatronic components and motion control



Electronic components and industrial sensors



Industrial software and intelligent systems



Multitechnology (complete mechatronics)



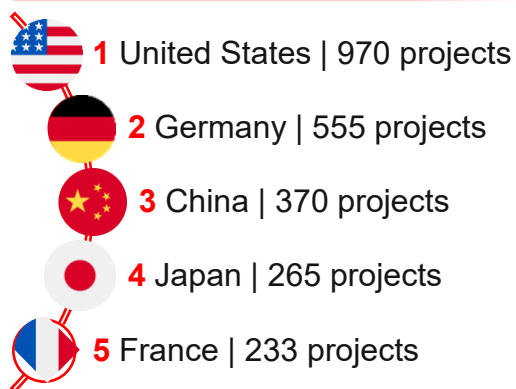
Foreign investment in sectors linked to mechatronics

Between 2021 and 2025, foreign direct investment (FDI) worldwide in sectors linked to mechatronics exceeded **€636.16 billion** and generated **1,170,212 new jobs**.

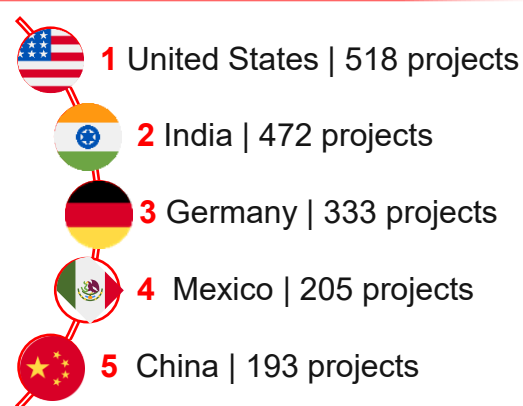
FDI in the chemical sector in the world, 2021-2025:

4,364 Projects (21% > 2016-2020)*	€636.16 billion in investment (x3 > 2016-2020)*	1,170,212 jobs created (62.9% > 2016-2020)*
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Countries of origin by projects



Destination countries by projects



Note: as sectors linked to mechatronics, electrical equipment and components, industrial machinery, commercial and service machinery, computer systems design services, electrical equipment, office machinery and equipment, and computer software and services have been taken into account.

The 20 most important investment companies by projects



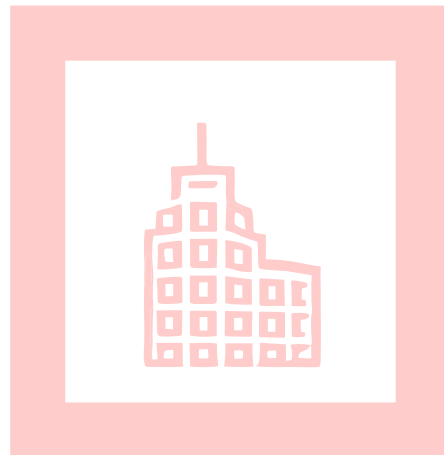
Source: own work based on fDi Markets

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3. Mechatronics in Catalonia

Catalan companies working in the field of mechatronics

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Companies

**>8,500
companies**

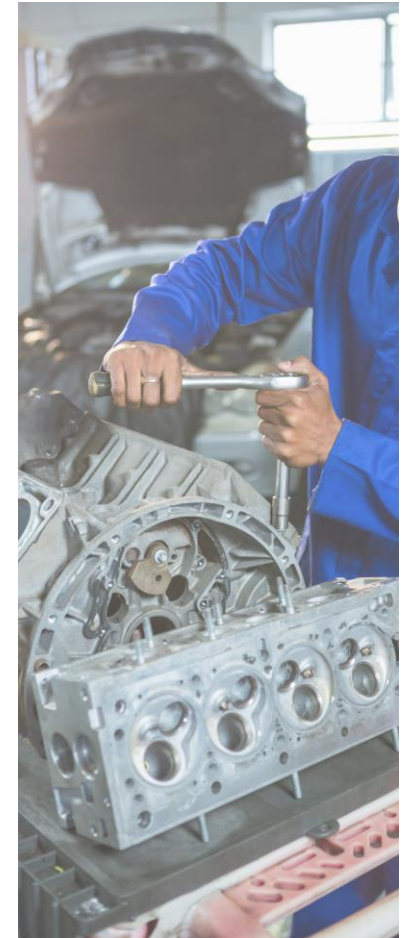
**>8,600
(€ million)**

Turnover



Employment

68,000 jobs



Note: for business quantification, companies specialised in the manufacture of specific machinery (CNAES 2822, 2829, 2830 and 289) and companies specialised in technical engineering (CNAE 7112) have been taken into account. The billing and employment data correspond to the company's total and may include activities that go beyond those related to mechatronics. Data from 2024 (or latest available)

Examples of sectors demanding solutions in mechatronics

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Automotive



Food and beverages



Machinery, equipment and robotics



Metallurgy



Aeronautics and space technologies



Chemicals and plastics



ICT and electronics



Life sciences



Logistics and packaging



Textile and fashion



Note: Partial illustrative image.

Mechatronics support ecosystem

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Technology and research centres



Support institutions



Universities and networks



Clusters



Business associations



Professional associations



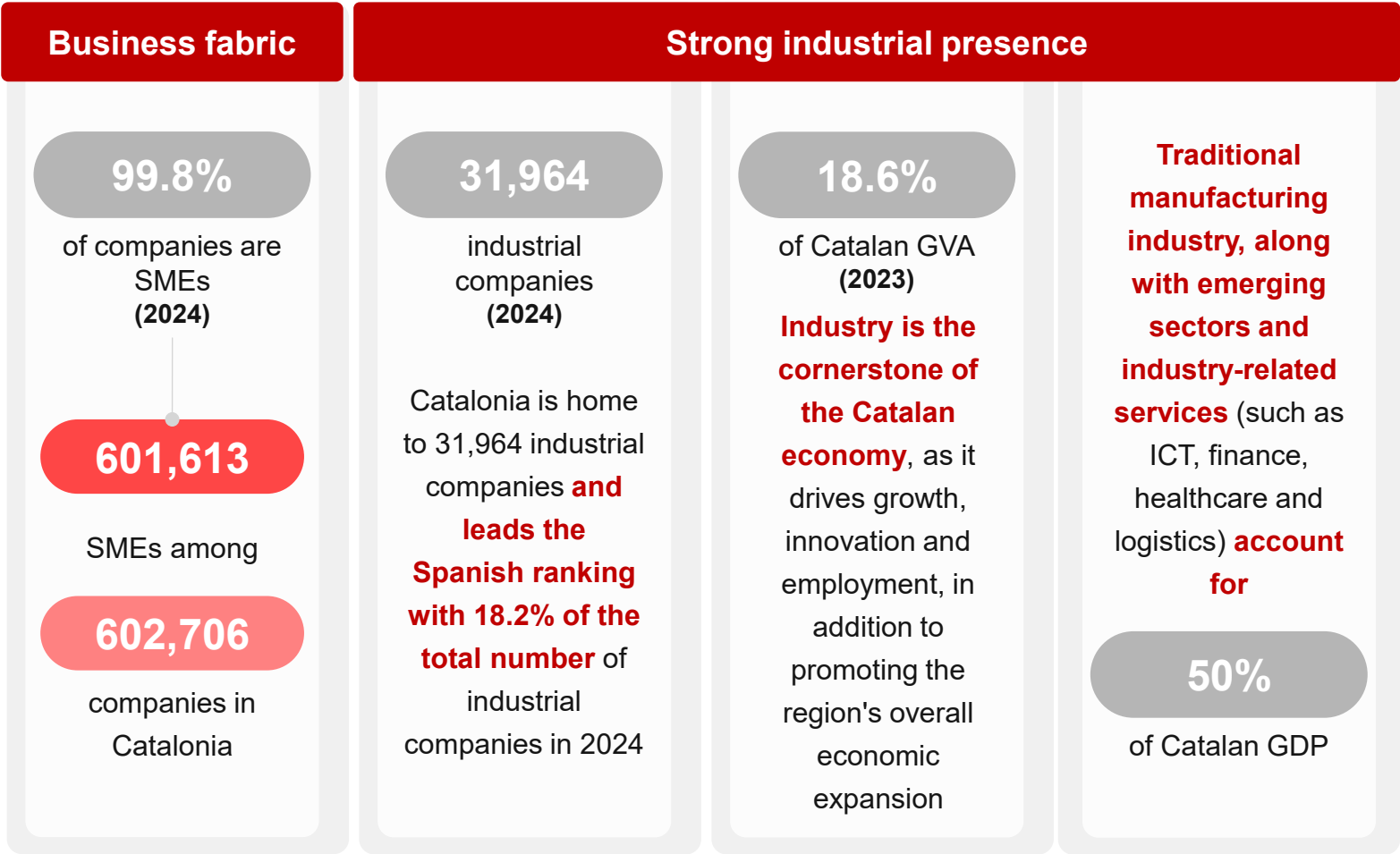
Fairs and events



Note: partial illustrative image

Source: ACCIÓ

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Source: ACCIÓ, based on Idescat and INE.

The main industrial sectors are mechatronics-intensive

18



1 | Chemistry and plastics

19.1% of Catalan industrial GVA



2 | Food and drinks

18.1% of Catalan industrial GVA



3 | Automotive

11.4% of Catalan industrial GVA



4 | Metallurgy

10.2% of Catalan industrial GVA



5 | Machinery and capital equipment

9.9% of Catalan industrial GVA



6 | Life Sciences

8.0% of Catalan industrial GVA



7 | Textile and fashion

5.4% of Catalan industrial GVA



8 | Paper, cardboard and packaging

5.0% of Catalan industrial GVA



9 | ICT and electronics

4.9% of Catalan industrial GVA



10 | Furniture and habitat

3.1% of Catalan industrial GVA

Foreign investment in sectors linked to mechatronics in Catalonia

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FDI in sectors linked to mechatronics in Catalonia 2021-2025:



70 projects



€1.12 billion



5,193 new jobs



Catalonia is the **first region in FDI** in sectors linked to mechatronics in **Europe** in number of projects (5.8% of the total).



Catalonia is the **first region** in FDI in sectors linked to mechatronics in **Spain**, with 42.2% of all projects.

Main investment companies in Catalonia and greater investment (2021-2025)



intel

€339 million



Schneider Electric

€82.9 million



pepsico

€65.5 million



€61.5 million



SHINING 3D

€61.5 million



FDI ranking by world regions (2021-2025)

By number of projects

- | | |
|----------------|----------------------------|
| 1. Karnataka | 6. Telangana |
| 2. Singapore | 7. Catalonia |
| 3. Texas | 8. Bavaria |
| 4. Dubai | 9. Tamil Nadu |
| 5. Maharashtra | 10. North Rhine-Westphalia |

7th place overall in the world ranking

First region in Europe in number of projects

Only region in Spain in the world's Top 10 in attracting projects

Source: ACCIÓ, based on fDi Markets

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Talent in Catalonia in mechatronics: higher education

Catalan universities award degrees and Master's degrees that offer knowledge that is directly and cross-sectionally applicable to the deployment of mechatronics.

Degrees

- Mechatronics Engineering
- Industrial Technology Engineering
- Mechanical Engineering
- Electronic Engineering
- Industrial Electronics and Automation Engineering
- Electronic Telecommunications Engineering
- Electronics Systems Engineering
- Electrical Engineering
- Energy Engineering
- Renewable Energy Engineering and Energy Efficiency

Master's

- Industrial Engineering, Automation and Robotics
- Industrial Engineering and Automotive Engineering
- Electronic Engineering
- Automatic Systems and Industrial Electronics
- Electric Vehicle Technologies
- Research in Mechanical Engineering

More than 350 graduates between 2019 and 2024

More than 7,180 graduates between 2019 and 2024

Catalan universities with training in disciplines related to mechatronics



UNIVERSITAT ROVIRA I VIRGILI



Universitat de Lleida



UNIVERSITAT DE VIC
UNIVERSITAT CENTRAL DE CATALUNYA



Universitat Pompeu Fabra
Barcelona



UNIVERSITAT RAMON LLULL



UNIVERSITAT RAMON LLULL



UNIVERSITAT RAMON LLULL



UNIVERSITAT DE VIC
UNIVERSITAT CENTRAL DE CATALUNYA

The **University of Vic-Central University of Catalonia** offers a **specific degree in Mechatronics Engineering**, which has 25 graduates each year

Source: ACCIÓ, based on data from the Department of Research and Universities

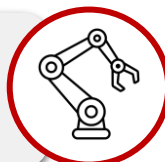
Talent in Catalonia in mechatronics: Vocational Training studies

Public and private educational centres in Catalonia offer a varied and extensive range of Vocational Training (VT), in mid-level and higher education in disciplines related cross-sectionally to mechatronics. Among these VT courses, the standouts are **Mechanical Manufacturing** and **Electricity and Electronics**.

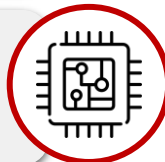
More than 11,400 students enrolled in the 2024-2025 academic year in Vocational Training in Mechanical Manufacturing and Electricity and Electronics



More than 3,600 students enrolled in the 2024-2025 academic year in Vocational Training in Mechanical Manufacturing



More than 7,800 students enrolled in the 2024-2025 academic year in Vocational Training in Electricity and Electronics



The **students enrolled** in Vocational Training in Mechanical Manufacturing and Electricity and Electronics **have increased by 3.7% year-on-year** in the last 5 years



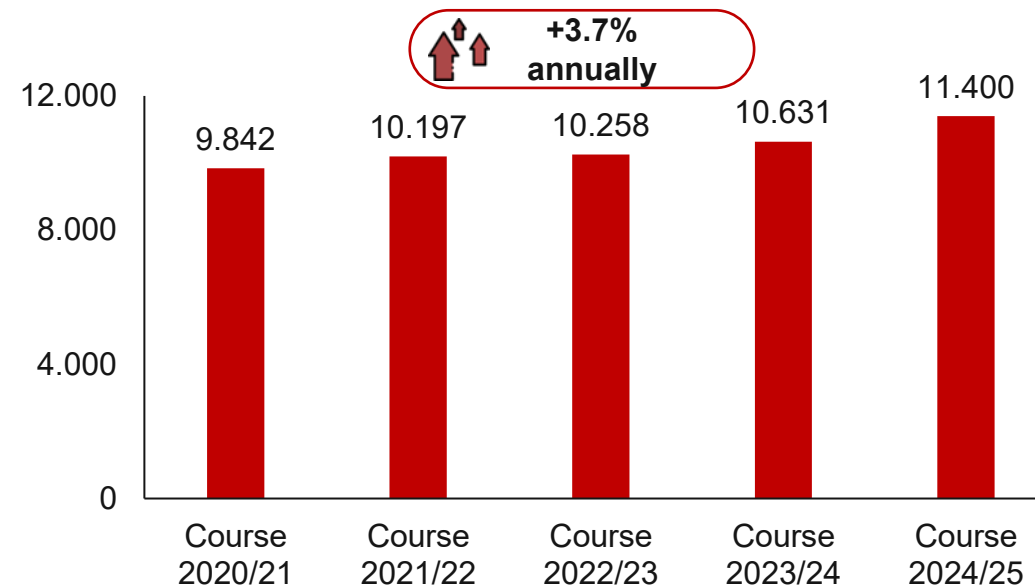
SEAT

The **SEAT Apprentice School** offers a **specific higher degree in Industrial Mechatronics**, with a 3-year German dual system and recognised in Spain and Germany.

The **Martorell Automotive Professional Training Centre** offers several training courses related to mechatronics and modern technology applied to the automotive industry



Evolution of the number of students enrolled in Vocational Training in Mechanical Manufacturing and Electricity and Electronics in Catalonia



Source: ACCIÓ, based on data from the Department of Education and Professional Training

Success stories: Catalan companies with highly digitalised plants

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 **AMES GROUP:** Optimisation of quality and production through sensorisation, recording and analysis of work equipment parameters

 **PLASTIC ARRAY:** Traceability and production control

 **CELO:** Small Things Matter

 **GALFER:** Brakes for motorcycles and bicycles. "Performance braking power"

 **GEDIA:** Trusted partner of the automotive industry

 **GESTAMP:** Smart manufacturing that ensures sustainability

 **HIPRA:** Let's build immunity for a healthier world

 **KELLOGG'S MANUFACTURING:** Digitalisation applied to continuous improvement

 **LINDE+WIEMANN:** Metal components for automotive

 **NOEL:** Pioneers in automated sausage production

 **PAGESVALENTI:** Leaders in the production of recycled yarns

 **PAULIG SPAIN:** Real-time monitoring system to optimise production processes

 **PIENSOS PICART:** Manufacturers of pet food since 1953

 **QUADPACK WOOD:** Machine and equipment monitoring

 **SEDAL:** Global leader in the manufacture of components for the sanitary and plumbing industry

Thank you

More information about the sector and related news:
<https://www.accio.gencat.cat/tic>



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