SPECIAL EDITION

Empresa XXI

March, 2026

Hi-Tech BasqueCountry

INDUSTRIAL TERRITORY DIGITAL TERRITORY

Empresa XXI

Published by
INDUSTRIA Y COMUNICACIÓN SA
c. Jose María Olavarri, 6 - 2º - 9
48001 Bilbao (Spain)
+34 944 400 000
empresa@grupoxxi.com
www.EmpresaXXI.com

Founder
F. JAVIER MIRANDA RUIZ

Managing Director
JAVIER MIRANDA DESCALZO

Director
AINARA LOZANO

Analysis and Editorial
VICKY LÓPEZ, IÑAKI CALVO
CRISTINA CAMARGO

Technical Director
JOSÉ ANGEL CALVO

Marketing Director
CLARA BOUZA

Graphics and Design
GEMA LAUZIRIKA, IBON UGARTEBURU

Production
GRUPO XXI DE COMUNICACIÓN EMPRESARIAL

Printed by
GRÁFICAS CASTUERA

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DEUTSCHE MESSE

Panoramic view of the Application Area at the previous edition of Hannover Messe.

TRADE FAIR | THE MAJOR GATHERING OF MANUFACTURING

A WINDOW INTO THE FUTURE

WITH MORE THAN 4,000 EXHIBITORS FROM ACROSS THE MANUFACTURING INDUSTRY, HANNOVER MESSE BECOMES THE LARGEST SHOWCASE OF TECHNOLOGICAL INNOVATION TRANSLATED INTO REAL-WORLD APPLICATIONS

The present and future of advanced manufacturing will come together from April 20 to 24 at Hannover Messe, the world's leading trade fair for the manufacturing industry. The event will bring together more than 4,000 exhibiting companies from the fields of mechanical engineering, electrical engineering, digital technologies and energy, all presenting their solutions for a competitive and sustainable industry.

Automation and digitalization, energy and industrial infrastructure, and technology transfer will be the main exhibition areas, with artificial intelligence as a cross-cutting theme.

The fair will become the largest showcase of technological innovation translated into real-world applications, addressing the transformation companies require to respond to current challenges such as global competition, rising cost pressures and continuous technological advances. In this regard, the event will demonstrate how AI, automation, digitalization, energy systems and research interact to achieve sustainable competitiveness.

Among the exhibitors are global technology companies such as AWS, Microsoft, SAP, Schneider Electric and Siemens, as well as technology leaders including Beckhoff, Festo, Harting, ifm, Lapp, Phoenix Contact, Rittal, Schaeffler and SEW.

AI WILL BE PRESENT ACROSS ALL EXHIBITION AREAS

Renowned research institutes such as Fraunhofer and KIT (Karlsruhe Institute of Technology) will also be present, showcasing industrial solutions for the future. In addition, more than 200 startups from a wide range of technological fields will present their innovations.

The extensive list of new exhibitors reflects the strong convergence of robotics, automation and artificial intelligence at the fair. Among them is Rockwell Automation, the U.S. company that is a global leader in automation and digitalization solutions, returning after many years. Another notable addition in robotics is Agile Robots, which will present its industrial and humanoid robotic systems, a paradigm of intelligent automation.

DMG Mori, the world's leading machine tool manufacturer, will also make its debut to showcase developments in connected manufacturing, digital twins and automated production solutions. Other new exhibitors include Jumo, Denso and Wandelbots.

In this new edition, industrial AI will take on particular prominence as a central driver of innovation and growth. Visitors will be able to experience specific applications and learn how productivity can be enhanced through its use.

Defense Production Park

The exhibition program will be complemented by an extensive agenda focused on networking and knowledge exchange, enabling experts and users to share ideas in a practical way about specific challenges and solutions. The new Center Stage will bring together leading figures from industry, politics and research to discuss practical solutions for the future of industry.

The fair will also feature a new thematic area, Defense Production Park, which will showcase how modern production technology meets the requirements of security-critical manufacturing while maintaining high scalability.

High-level political delegations from Europe and around the world will attend the event. The spotlight will be on Brazil, the partner country of this edition, reflecting the strategic importance of German-Brazilian relations. Looking ahead, Spain will be the partner country in 2027, in recognition of its strong industrial relationship with Germany and their shared vision for Europe's future.

Empresa XXI
March, 2026

EUROPEAN UNION | DIGITALISATION

THE ALTERNATIVE IS IRRELEVANCE

THE CONTINENT ROLLS OUT ITS ROADMAP FOR A TRANSFORMATION AIMED AT ENSURING TECHNOLOGICAL SOVEREIGNTY AND ECONOMIC COMPETITIVENESS


FREEPIK

AI ADOPTION SURGES IN INDUSTRY

The use of AI by industrial companies recorded strong growth in Europe last year, although the percentage of companies using it remains relatively modest.

	USE OF AI		INTERNET ACCESS		E-COMMERCE SALES	
	2025	%25/24	2024	%25/24	2024	%25/24
Romania	3.2%	+149%	99.7%	+1%	11.9%	+19%
Estonia	22.7%	+132%	99.3%	+0%	12.7%	-22%
France	16.9%	+128%	99.4%	-0%	16.1%	+1%
Lithuania	19.2%	+118%	100%	+0%	29.9%	+11%
Slovakia	15.8%	+96%	97.5%	+1%	9.6%	+12%
Italy	14.7%	+83%	99.3%	+0%	10.4%	-14%
Denamark	38.6%	+77%	100%	+0%	21.9%	+5%
Czech Rep.	16.7%	+75%	98.4%	+0%	18.9%	+18%
Spain	**17.1%**	**+75%**	**99.4%**	**+0%**	**21.5%**	**-4%**
Navarre	25.8%	+94%	100%	+1%	19.6%	+22%
Madrid	20.0%	+91%	99.5%	-0%	21.2%	+65%
Basque Country	**19.6%**	**+90%**	**98.9%**	**-1%**	**11.0%**	**-36%**
Catalonia	20.8%	+65%	99.5%	+1%	23.4%	+11%
Valencian Com.	16.2%	+42%	100%	+0%	21.6%	-15%
Belgium	39.8%	+71%	100%	+0%	20.4%	-17%
Sweden	32.9%	+69%	99.9%	+1%	22.0%	+17%
EU-27	**17.3%**	**+63%**	**99.2%**	**-0%**	**14.8%**	**-2%**
Hungary	7.8%	+61%	95.4%	-2%	11.9%	-16%
Netherlands	28.6%	+58%	100%	+0%	21.3%	-3%
Germany	24.4%	+51%	99.9%	+0%	14.2%	+4%
Poland	7.7%	+50%	98.5%	-1%	13.7%	+7%
Latvia	12.4%	+47%	100%	+0%	15.7%	+10%
Portugal	9.9%	+47%	99.1%	+1%	9.7%	+16%
Austria	32.5%	+43%	99.9%	-0%	20.0%	-13%
Cyprus	4.3%	+43%	100%	+0%	13.0%	+11%
Luxembourg	37.6%	+39%	100%	+1%	10.0%	+14%
Croatia	12.9%	+33%	99.2%	+1%	16.8%	-27%
Malta	17.8%	+30%	98.1%	-1%	-	-
Bulgaria	5.3%	+21%	96.7%	-1%	8.9%	+8%
Slovenia	22.7%	+5%	99.2%	+1%	14.0%	+22%
Greece	7.8%	+4%	97.9%	-1%	13.0%	-14%
Ireland	17.7%	+1%	98.9%	-1%	23.0%	-38%

Percentage of industrial companies with 10 or more employees using these digital tools.
Source: Eurostat.

At this stage of the game, virtually all European companies have internalized the pressing need to undertake their respective digital transformations, not only to continue growing but also to ensure their very survival. In this sense, the only alternative to this process is irrelevance. Or worse: disappearance.

The European Union itself, in the roadmap it set out several years ago to ensure that the Old Continent remains economically competitive, technologically sovereign and resilient by 2030, assigns a key role to digital infrastructure —particularly connectivity— and to the digitalization of companies.

Among the main objectives set by EU member states for the end of this decade are 20 million ICT specialists by the end of the period, universal access for European households to ultra-high-speed networks, and 5G coverage across all populated areas. The plan also includes the deployment of 10,000 highly secure and climate-neutral edge nodes, distributed in such a way as to ensure access to low-latency data services (measured in milliseconds) wherever companies are located.

More unicorns

The EU is also advocating for an expansion of the portfolio of fast-growing innovative companies and improved access to financing. The aim is to double the number of so-called "unicorns" and to ensure that cutting-edge and sustainable semiconductor production in Europe —including processors— accounts for 20% of global production value.

Likewise, among the targets established under the so-called "Digital Decade" is that 75% of European companies adopt cloud computing services, big data and Artificial Intelligence (AI), and that more than 90% of European SMEs reach at least a basic level of digital intensity, understood as the adoption and use of different technologies in this field.

Looking exclusively at manufacturing SMEs, specifically those with 10 or more employees, they still remain some distance from the proposed digital intensity levels. In fact, on average across the EU, only 72% have reached a basic level of digital intensity (2024 data, the most recent available). Spain stands at the European average (71%), ahead of France (64%), but far behind Sweden (89%), Belgium (87%) and Germany (83%), which themselves have not yet reached the 2030 target ratio. Indeed, only Finland (97%) has surpassed it.

Meanwhile, 27% of all European companies in this segment had achieved a high level of digital intensity in 2025, meaning they used between seven

20%
OF GLOBAL SEMICONDUCTOR PRODUCTION VALUE **BY 2030**

75%
OF COMPANIES WITH SERVICES ADAPTED TO THE CLOUD AND AI

and nine technologies in their daily operations. This represented a 54% increase compared with 2023.

By country, the highest levels of digital intensity among manufacturing firms were recorded in the Netherlands (48%), Belgium (46%) and Denmark (44%).

Spain (28%), for its part, slightly exceeded the EU average. However, looking at develop-ments over the last two years, the strongest growth was recorded in Romania, Czechia and Slovakia, the countries that previously had the lowest levels of high digital intensity.

The adoption of AI, cloud computing and Big Data by companies has increased.

TECHNOLOGY ADOPTION ON THE RISE

The percentage of manufacturing firms with high digital intensity (use of between seven and nine technologies) in the EU has surged by 54% in two years.

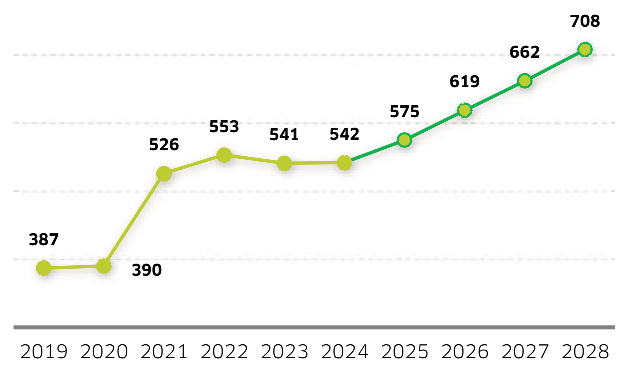
	2025	%25/23	%25/21	2023	2021
Romania	11.8%	+149%	+166%	4.7%	4.4%
Czech Rep.	31.7%	+119%	+140%	14.4%	13.2%
Slovakia	19.3%	+96%	+90%	9.8%	10.1%
Bulgaria	7.5%	+85%	+180%	4.1%	2.7%
Estonia	25.7%	+85%	+119%	13.9%	11.7%
Luxembourg	30.2%	+81%	+56%	16.7%	19.3%
Italy	29.9%	+69%	+96%	17.7%	15.3%
Lithuania	32.4%	+64%	+109%	19.7%	15.5%
Belgium	46.0%	+60%	+105%	28.8%	22.5%
Denamark	44.0%	+58%	+60%	27.8%	27.6%
Poland	21.9%	+56%	+129%	14.0%	9.6%
EU-27	**27.3%**	**+54%**	**+76%**	**17.8%**	**15.5%**
Spain	**28.2%**	**+52%**	**+51%**	**18.5%**	**18.6%**
Germany	29.1%	+47%	+57%	19.8%	18.6%
Portugal	17.9%	+40%	+54%	12.8%	11.6%
Slovenia	23.0%	+36%	+59%	16.9%	14.5%
Latvia	20.6%	+34%	+106%	15.4%	10.0%
Sweden	39.5%	+29%	-0%	30.7%	39.7%
Greece	16.5%	+29%	+86%	12.9%	8.9%
Hungary	21.4%	+27%	+197%	16.8%	7.2%
Netherlands	48.1%	+27%	+58%	37.8%	30.5%
Ireland	31.8%	+21%	+24%	26.4%	25.7%
Austria	26.8%	+16%	+21%	23.1%	22.2%
Cyprus	20.7%	+14%	+46%	18.2%	14.2%
Croatia	18.1%	+6%	+50%	17.0%	12.0%
Malta	25.7%	-12%	+23%	29.1%	20.8%
France	25.6%	-	+149%	-	10.3%

Percentage of manufacturing companies with 10 or more employees with a very high digital intensity index. Source: Eurostat.

ASIA LEADS INDUSTRIAL AUTOMATION

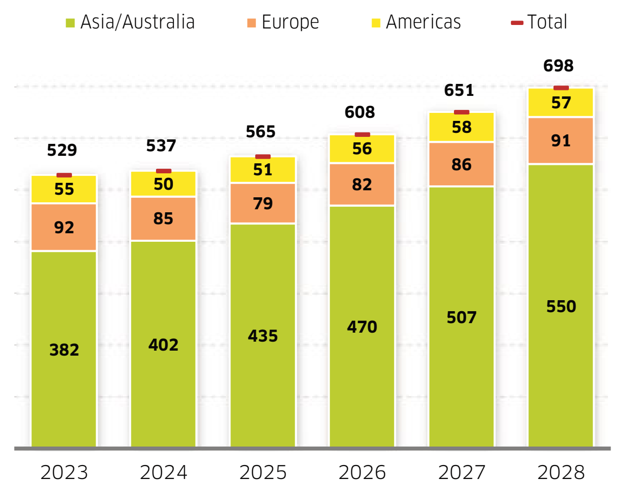
China consolidates its position as the world's largest market with a 57% share and is expected to maintain an average annual growth rate of 10% through 2028.

TRENDS IN INDUSTRIAL ROBOTS INSTALLED WORLDWIDE



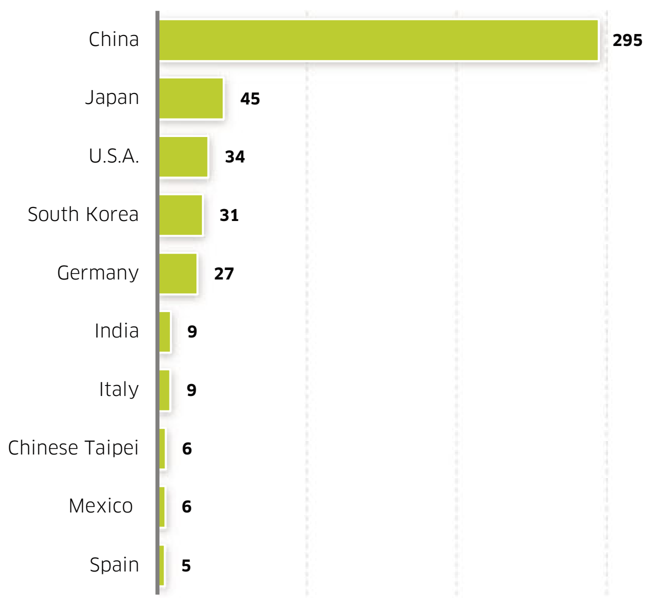
Thousand units. 2025-2028, estimated. Source: World Robotics 2025, IFR.

INSTALATIONS BY REGION



Thousand units. 2025-2028, estimated. Source: World Robotics 2025, IFR.

THE TEN LEADING MARKETS IN THE WORLD



Thousand units. Source: IFR.

EUROPEAN UNION | INDUSTRIAL AUTOMATION

EUROPE FALLS BEHIND IN THE GLOBAL RACE

ASIA ACCELERATES AND ACCOUNTS FOR THREE OUT OF EVERY FOUR INDUSTRIAL ROBOTS INSTALLED WORLDWIDE, WHILE THE EU SLOWS ITS PACE WITH AN 8% DROP IN 2024

Automation is experiencing its golden age as one of the main drivers of competitiveness in the global economy. In 2024, more than 542,000 industrial robots were installed worldwide, the second-highest figure in history, only 2% below the record reached in 2022, consolidating a market that has definitively surpassed the threshold of half a million units annually, according to data from the World Robotics 2025 report, published by the International Federation of Robotics (IFR).

The outlook remains positive, with installations expected to reach up to 575,000 units in 2025, with projections pointing to more than 700,000 annual units before 2028.

In this scenario, Asia is accelerating in the robotics race and gaining scale, while Europe is falling behind and losing relative ground at a particularly sensitive moment.

Asian leadership no longer leaves room for nuance. In 2024, 74% of all industrial robots installed worldwide were concentrated in Asia, compared with 16% in Europe and 9% in the Americas. As a reference point, Asia has already surpassed two million operational robots, representing around 43% of the global installed base— a share unmatched by any other region.

China has emerged as the world's leading market, with 295,045 units installed, equivalent to 54% of the global total, consolidating its position as the main hub of demand and technological deployment. This growth is supported by an industrial strategy aimed at strengthening technological autonomy and increasing production capacity, in a context of expanding demand in sectors such as electronics, machinery and consumer goods.

74%
OF ROBOTS INSTALLED
IN 2024 WERE IN ASIA

22%
THE ROBOTICS MARKET
WILL GROW BY 2028

Japan remains the world's second-largest market with 44,453 units, followed by the United States with 34,164 units and South Korea with 30,596, while Germany, with 26,982 robots installed, is the only European country ranked among the world's top five markets.

The EU loses ground

Europe maintains a relevant position in absolute terms, but shows a loss of momentum. Uncertainty stemming from trade tensions, tariff policies and the reconfiguration of supply chains is affecting industrial investment.

According to IFR data, revenues and order intake ranged between 0% and –5% year-on-year in the first quarter of 2025. This weakness adds to the 8% decline in robot installations in 2024, which fell to 85,006 units, after reaching a peak of 92,393 the previous year.

This decline came after the peak recorded in 2023, when projects delayed by supply chain disruptions were finally executed, distorting the recent evolution of the market.

One of the key factors explaining developments in the European market is the change in the sectoral structure of demand. Traditionally, the automotive industry has been the main driver of investment in industrial robotics. However, in

2024 electronics regained global leadership, with 128,899 installations and a 24% market share, ahead of the automotive sector, which registered 126,088 units.

This shift particularly benefits Asia, where these sectors carry greater weight, while Europe —more dependent on automotive— has become more exposed to the sector's slowdown.

The performance of the continent's main markets confirms this trend. Germany, the largest market in Europe and fifth worldwide, recorded 26,982 installations in 2024, 5% fewer than the previous year. Over the past decade, the market has followed a growth trajectory punctuated by episodes of volatility, with annual levels fluctuating between 20,000 and 28,000 units, largely determined by investment cycles in the automotive sector.

Italy, the second-largest European market, experienced a more pronounced decline. In 2024, 8,783 industrial robots were installed, 16% fewer than in 2023. After several years of growth that had pushed the Italian market above 11,000 units in recent years, the trend has reversed amid widespread weakness in industrial investment.

2%

GROWTH IN THE **NUMBER OF ROBOTS INSTALLED** IN SPAIN IN 2024

Spain, the exception

By contrast, Spain shows a more favorable trend within the EU. With a total of 5,086 robots installed in 2024, the market posted slight growth, positioning the country as the third-largest market within the bloc, surpassing France and moving closer to the levels of the leading benchmark countries.

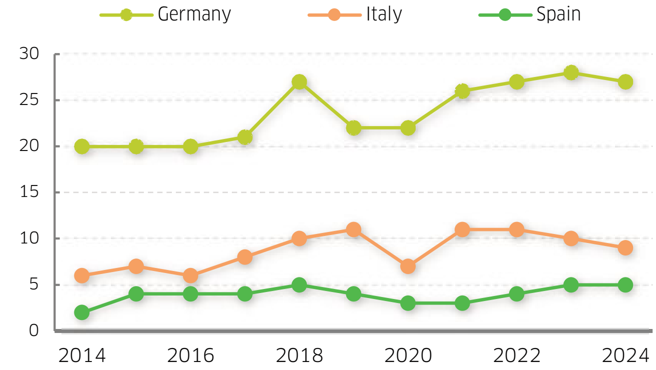
This performance is largely explained by greater sectoral diversification in demand, particularly in metal and machinery, food, plastics and chemicals, and electronics. This shift has partially offset the slowdown experienced by the automotive sector (–2.6%), although the sector still accounted for 44% of robots installed.

THE AUTOMOTIVE CRISIS IS BEING FELT ACROSS THE CONTINENT

SPAIN STANDS APART FROM THE EUROPEAN BLOC

Spain overtakes France to become the third-largest European market, as robotic installations grow by 2%, while they decline in Germany (–5%) and Italy (–16%).

EVOLUTION OF THE THREE MAIN MARKETS IN EUROPE



Thousand units. Source: IFR. 2024 results, preliminary.

INSTALATION OF ROBOTS IN EUROPE BY SECTOR

	2024	%24/25	2023	2022
Motor vehicles	23,039	-10%	25,508	19,289
Metal and machinery	18,716	-0%	18,797	19,013
Rubber and chemical products	9,683	+22%	7,951	8,347
Food industry	6,433	+29%	4,976	5,051
Electrical / Electronics	6,042	+0%	6,036	5,568
Other sectors	13,705	+44%	9,526	9,928
Not specificated	8,832	-55%	19,599	17,708

Data in units. Source IFR.

MACROECONOMICS | GROSS DOMESTIC PRODUCT

LOSING GROUND

THE EU –LED BY GERMANY, FRANCE AND ITALY– ALONG WITH THE UNITED STATES, JAPAN AND THE UNITED KINGDOM, IS LOSING GLOBAL SHARE TO CHINA, WHICH HAS RECORDED EXPLOSIVE GROWTH SINCE THE END OF THE LAST CENTURY

The automotive industry is one of the sectors that contributes the most to the industrial GDP in the world.

THE FASTEST-GROWING COUNTRIES OVER THE PAST FIVE YEARS

Global GDP grew 4% over the last five years despite the impact of a pandemic.
Türkiye was the most dynamic country between 2019 and 2024, with GDP growth of 75%.

	2024	%24/23	%24/19
Türkiye	1,359	+19%	+75%
Uzbekistan	115	+12%	+71%
Serbia	90	+11%	+67%
Bulgaria	113	+11%	+65%
Venezuela	120	+17%	+64%
Ethiopia	150	+10%	+63%
Kazakhstan	291	+11%	+60%
Lithuania	85	+6%	+54%
Romania	383	+10%	+53%
Poland	918	+13%	+52%
Croatia	93	+9%	+51%
Ireland	609	+7%	+50%
Costa Rica	95	+10%	+48%
Guatemala	113	+8%	+47%
Singapur	547	+8%	+46%
Ivory Coast	87	+8%	+44%
Argentina	638	-2%	+43%
Vietnam	476	+10%	+42%
Mexico	1,856	+3%	+42%
Saudi Arabia	1,240	+2%	+39%
Dominican Rep.	124	+3%	+39%
Algeria	269	+9%	+39%
India	3,910	+7%	+38%
Iran	475	+4%	+37%
Czech Rep.	347	+1%	+35%
Hungary	223	+4%	+35%
Israel	540	+6%	+35%
U.S.A.	28,751	+5%	+34%
Luxembourg	93	+5%	+34%
Slovakia	141	+6%	+33%
Netherlands	1,215	+7%	+31%
Portugal	313	+7%	+30%
Uruguay	81	+4%	+30%
Switzerland	937	+5%	+30%
Colombia	419	+14%	+30%
China	18,744	+3%	+29%
Canada	2,244	+3%	+29%
Russia	2,174	+5%	+28%
U.K.	3,686	+8%	+28%
Bangladesh	450	+3%	+28%
U.A.E.	552	+6%	+27%

	2024	%24/23	%24/19
Peru	289	+8%	+27%
Australia	1.757	+1%	+26%
World	**110,983**	**+4%**	**+25%**
Angola	101	-6%	+25%
Belgium	671	+3%	+25%
Indonesia	1.396	+2%	+25%
Morocco	161	+10%	+25%
Qatar	219	+1%	+24%
Panama	87	+3%	+24%
Ucraine	191	+5%	+24%
Greece	256	+5%	+24%
Spain	**1,726**	**+7%**	**+23%**
Denmark	425	+5%	+23%
Philippines	462	+6%	+23%
New Zealand	260	+2%	+22%
Egypt	389	-2%	+22%
Oman	107	+1%	+22%
Austria	535	+4%	+21%
Ghana	82	+2%	+20%
Kenya	120	+12%	+20%
Puerto Rico	126	+6%	+20%
Iraq	280	+4%	+20%
Chile	330	-2%	+19%
Germany	4,686	+3%	+18%
Norway	484	+0%	+18%
Italy	2,381	+3%	+18%
Brazil	2,186	-0%	+17%
France	3,160	+3%	+16%
Ecuador	125	+3%	+16%
Pakistan	372	+10%	+16%
Malasia	422	+6%	+16%
Kuwait	160	-3%	+14%
Sweden	604	+4%	+14%
Hong Kong	407	+7%	+12%
Finland	299	+1%	+12%
Sri Lanka	99	+18%	+11%
South Korea	1,875	+2%	+7%
South Africa	401	+5%	+3%
Thaliland	527	+2%	-3%
Japan	4,028	-4%	-21%
Nigeria	252	-48%	-62%

Data in billions of US dollars at current prices. Countries with GDP above USD 80 billion in 2024.
Source: World Bank (updated on 28 January 2026).

Asia's momentum has been reshaping the global economic landscape in recent years. In this new scenario, traditional developed economies such as the United States, Japan and Europe are losing ground relative to the advance of a giant that only a few decades ago remained largely dormant and has since become the world's factory: China.

Data from the World Bank show that the aggregate Gross Domestic Product (GDP) of EU member states accounted for almost a quarter (22%) of global GDP at the end of the last century, in 2000, but had fallen to less than a fifth (18%) by the end of 2024.

As mentioned, this loss of share has also affected the U.S. economy, which during the same period lost four percentage points of global weight (from 30% to 26%), and above all the Japanese economy, which shed eleven percentage points (from 15% to 4%).

By contrast, China has experienced spectacular development over this period, enabling it to challenge the hegemony of the United States as the world's leading economic power. By 2024, China already accounted for 17% of global GDP, representing an increase of 13 percentage points compared with twenty-four years earlier.

Since the end of the last century, the relative economic contraction of Europe has also been reflected in the bloc's main economies. Germany has lost two percentage points of global share (from 6% to 4%), France one (from 4% to 3%), and Italy another (from 3% to 2%).

POLAND'S GDP SURGES

Poland's GDP grew by 13% in 2024 and has accumulated a 58% increase over the past five years.

	2024	%24/23	%24/19	2024 SHARE
Germany *	4,329	+3%	+22%	24%
France *	2,920	+3%	+20%	16%
Italy	2,200	+3%	+22%	12%
Spain *	**1,594**	**+6%**	**+27%**	**9%**
Netherlands	1,122	+7%	+35%	6%
Poland	848	+13%	+58%	5%
Belgium *	620	+3%	+29%	3%
Ireland	563	+7%	+55%	3%
Sweden	559	+4%	+18%	3%
Austria	494	+3%	+25%	3%
Denmark	392	+5%	+27%	2%
Romania *	354	+10%	+58%	2%
Czech Rep.	321	+1%	+40%	2%
Portugal *	289	+7%	+35%	2%
Finland	276	+1%	+16%	2%
Greece *	237	+5%	+28%	1%
Hungary *	206	+4%	+40%	1%
Slovakia	130	+5%	+38%	1%
Bulgaria	105	+11%	+71%	1%
Luxembourg	86	+5%	+38%	0%
Croatia *	86	+8%	+54%	0%
Lithuania	79	+6%	+60%	0%
Eslovenia	67	+5%	+40%	0%
Latvia	40	+2%	+37%	0%
Estonia	40	+4%	+40%	0%
Cyprus *	35	+7%	+49%	0%
Malta	23	+11%	+58%	0%
UE-27	**18,016**	**+4%**	**+28%**	**100%**

Source: Eurostat (updated on 10 February 2026).
GDP, in billions of euros at current prices. (*): Preliminary.


FREEPIK

Although it no longer belongs to the EU club, the United Kingdom —the world's sixth-largest economy— has also seen its share of global GDP decline, losing two percentage points (from 5% to 3%).

The EU, at different speeds

In aggregate terms, the European Union economy recorded year-on-year growth of 4% in current euros in 2024, according to data updated in early February this year by Eurostat.

Spain (+6%), the Netherlands (+7%) and Poland (+13%) led national GDP growth among the main economies of the EU-27, while Germany, France and Italy posted more modest increases, specifically 3% in each case.

Particular mention should be made of Poland's economic performance, whose GDP has grown 58% over the past five years, 30 percentage points above the EU average.

The only 2025 figures currently available from the European Union's statistical office (provisional data) suggest that Germany's GDP grew by 3% over the past year, reaching €4.47 trillion, half the growth recorded by Spain (+6%), whose economy approached €1.69 trillion, and also below the Netherlands (+5%), which reached €1.18 trillion.

€
4.47
TRILLION, **GERMANY'S GDP** IN 2025, 3% HIGHER THAN IN 2024

CHINA CHALLENGES U.S. ECONOMIC DOMINANCE

After decades of spectacular growth, China is closing in on the United States, which is losing weight as the world's leading economy.

					SHARE	
	2024	%24/23	%24/19	%24/00	2024	2000
U.S.A.	28.8	+5%	+34%	+180%	26%	30%
China	18.7	+3%	+29%	>999%	17%	4%
Germany	4.7	+3%	+18%	+138%	4%	6%
Japan	4.0	-4%	-21%	-19%	4%	15%
India	3.9	+7%	+38%	+735%	4%	1%
U.K.	3.7	+8%	+28%	+121%	3%	5%
France	3.2	+3%	+16%	+132%	3%	4%
Italy	2.4	+3%	+18%	+107%	2%	3%
Canada	2.2	+3%	+29%	+201%	2%	2%
Brazil	2.2	-0%	+17%	+233%	2%	2%
Russia	2.2	+5%	+28%	+737%	2%	1%
South Korea	1.9	+2%	+7%	+214%	2%	2%
Mexico	1.9	+3%	+42%	+150%	2%	2%
Australia	1.8	+1%	+26%	+321%	2%	1%
Spain	1.7	+7%	+23%	+189%	2%	2%
Indonesia	1.4	+2%	+25%	+746%	1%	0%
Türkiye	1.4	+19%	+75%	+395%	1%	1%
Saudi Arabia	1.2	+2%	+39%	+554%	1%	1%
Netherlands	1.2	+7%	+31%	+191%	1%	1%
EU	**19.5**	**+4%**	**+23%**	**+168%**	**18%**	**22%**
WORLD	**111.0**	**+4%**	**+25%**	**+227%**	**100%**	**100%**

GDP in trillions of European dollars (updated on 28 January 2026). Countries with more than USD 1 trillion GDP in 2024. Source: World Bank.

MACROECONOMICS | FOREIGN TRADE

THE EU FACES THE TRADE WAR

BY SEPTEMBER 2025, ITS EXPORTS WERE GROWING BY 5%, WHILE GLOBAL TRADE WAS EXPANDING BY 6%

EMPRESA XXI

Despite the trade tensions that marked the beginning of 2025, global merchandise exports had recorded 6% growth by the end of the third quarter of the year (latest data from the World Trade Organization-WTO) compared with the same period in 2024. Their total value reached $19.351 trillion.

The tariffs imposed by the U.S. administration also appear to have had limited impact on EU exports, which grew at a similar pace (+5%), reaching $5.665 trillion.

Exports to non-EU countries increased slightly more (+6%) than those directed to intra-EU markets (+5%), although the latter were higher in absolute terms, accounting for almost 61% of the total.

The two other major global economies, the United States (+5%) and China (+6%), also recorded export value growth within the same range, while Germany's and Spain's international sales increased by 3% during the period.

Although it remains a projection, the United Nations Conference on Trade and Development (UNCTAD) estimated last December that global trade in goods and services will exceed $35 trillion for the first time in 2025, representing 7% growth compared with 2024, driven largely by the expansion of merchandise trade.

Germany and Spain, on the rise

Meanwhile, with still provisional data, Germany's Federal Statistical Office reported that German merchandise exports reached 1.57 trillion in 2025 (+1%), 56% of which were destined for the EU itself.

For its part, Spain's National Statistics Institute (INE) estimates that Spain exported goods worth 387 billion (+1%), mainly to EU markets (62% of total exports).

By contrast, Basque Country exports of goods declined by 5% to just under €30 billion last year, weighed down by the downturn in its two main markets: Germany and France. Nevertheless, EU countries absorbed 61% of its sales, according to Eustat.

The key question now is how global trade will evolve in 2026, especially fol-

1%

EXPORTS IN GERMANY AND SPAIN INCREASED BY 1% IN 2025

EXPORTS OUTSIDE THE EU LOSE WEIGHT IN GERMANY

German exports to non-EU countries accounted for 44% of the total in 2025, two percentage points less than 2024. Spanish extra-EU exports remained stable (38%), while those of the Basque Country fell by one point (39%).

	GERMANY			SPAIN			BASQUE COUNTRY		
YEAR	TOTAL	%EU	%RES/WLD	TOTAL	%EU	%RES/WLD	TOTAL	%EU	%RES/WLD
2025	1,570	56%	44%	387	62%	38%	30	61%	39%
2024	1,550	54%	46%	384	62%	38%	31	60%	40%
2023	1,575	55%	45%	384	63%	37%	33	62%	38%
2022	1,594	55%	45%	388	63%	37%	33	64%	36%
2021	1,371	54%	46%	315	61%	39%	26	64%	36%
2020	1,207	53%	47%	264	61%	39%	21	57%	43%
2019	1,328	59%	41%	291	59%	41%	25	68%	32%
2018	1,317	59%	41%	285	59%	41%	26	66%	34%
2017	1,279	59%	41%	276	59%	41%	24	65%	35%
2016	1,204	59%	41%	256	59%	41%	22	66%	34%
2015	1,194	58%	42%	250	57%	43%	22	64%	36%
2014	1,124	58%	42%	241	57%	43%	23	63%	37%
2013	1,088	57%	43%	236	56%	44%	21	61%	39%
2012	1,093	57%	43%	226	57%	43%	21	63%	37%
2011	1,061	59%	41%	215	60%	40%	20	64%	36%
2010	952	60%	40%	187	62%	38%	18	62%	38%
2009	803	63%	37%	160	63%	37%	15	61%	39%
2008	984	64%	36%	189	62%	38%	20	67%	33%
2007	965	65%	35%	185	63%	37%	19	68%	32%
2006	893	64%	36%	170	63%	37%	17	70%	30%
2005	786	65%	35%	155	64%	36%	14	70%	30%

In billions of euros. The figures for 2024 and 2025 for Spain and for 2025 for the Basque Country are provisional. Sources: German Federal Statistical Office, Spanish Institute for Foreign Trade (Icex) and Basque Statistical Institute (Eustat).

Container movements inside the facilities of the Port of Bilbao.

lowing the outbreak of war in the Middle East. It is still too early to assess the consequences of the conflict, although it is unlikely to improve the outlook projected by UNCTAD at the end of 2025, when it had already warned of weakening export momentum this year due to slower global growth, rising debt, higher trade costs and intensifying uncertainty.

ASIA CONSOLIDATES ITS POSITION AS THE MAIN GLOBAL TRADE HUB

By the end of 2024, Asia accounted for 37% of global exports, having increased its share by nine percentage points since 2000. During that period, China's share rose by 11 points, reaching 15% of global exports.

	2024		2019		2008		2000	
	Value	%World	Value	%World	Value	%World	Value	%World
Asia	8,985	37%	6,773	36%	4,725	29%	1,835	28%
Europe	8,647	35%	6,980	37%	6,598	41%	2,647	41%
EU (total)	7,150	29%	5,825	31%	5,496	34%	2,172	34%
EU (intra-EU)	4,355	18%	3,439	18%	3,402	21%	1,314	20%
China	3,577	15%	2,499	13%	1,431	9%	249	4%
U.S.A, Mexico and Canada	3,251	13%	2,553	13%	2,035	13%	1,225	19%
EU (non-EU)	2,795	11%	2,386	13%	2,093	13%	858	13%
U.S.A.	2,065	8%	1,643	9%	1,287	8%	782	12%
Germany	1,682	7%	1,489	8%	1,446	9%	552	9%
Netherlands	921	4%	709	4%	638	4%	233	4%
Japan	707	3%	706	4%	781	5%	479	7%
South Korea	684	3%	542	3%	422	3%	172	3%
Italy	674	3%	538	3%	543	3%	241	4%
France	639	3%	571	3%	616	4%	328	5%
Africa	627	3%	481	3%	548	3%	145	2%
Mexico	617	3%	461	2%	291	2%	166	3%
U.A.E.	604	2%	389	2%	239	1%	50	1%
Canada	569	2%	449	2%	456	3%	277	4%
Belgium	536	2%	447	2%	472	3%	188	3%
United Kingdom	513	2%	460	2%	477	3%	283	4%
Singapore	506	2%	391	2%	338	2%	138	2%
Switzerland	447	2%	314	2%	236	1%	81	1%
India	443	2%	324	2%	195	1%	42	1%
Russia	433	2%	420	2%	472	3%	105	2%
Spain	**424**	**2%**	**334**	**2%**	**281**	**2%**	**115**	**2%**
Vietnam	405	2%	264	1%	63	0%	14	0%
Australia and New Zealand	383	2%	311	2%	218	1%	77	1%
WORLD	**24,456**	**100%**	**19,008**	**100%**	**16,192**	**100%**	**6,452**	**100%**

Data updated on 27 February 2026 in billions of dollars. Source: World Trade Organisation.

Empresa XXI
March, 2026

BASQUE AUXILIARY INDUSTRY IMPROVES RESULTS

The seven sectors analyzed increased turnover by 1% in 2024, although investment declined.

	2024	%24/23	2023	2022	2021	2020
METALS MELTING						
Workforce	7,003	-4%	7,312	6,552	6,697	6,532
Staff costs	382	+3%	370	323	303	291
FY Investment	75	+1%	74	91	47	57
Revenue	1,724	-4%	1,788	1,738	1,398	1,164
Net Profit	34	-33%	51	32	10	-2
METAL CONSTRUCTION						
Workforce	9,935	+2%	9,761	9,731	9,517	9,444
Staff costs	456	+5%	436	405	382	362
FY Investment	32	-2%	32	54	38	29
Revenue	1,495	-2%	1,525	1,477	1,234	1,059
Net Profit	97	-4%	101	86	52	15
FORGING AND STAMPING						
Workforce	6,736	-1%	6,824	6,841	6,769	6,757
Staff costs	384	+2%	377	346	328	312
FY Investment	62	-6%	66	105	69	78
Revenue	2,146	-7%	2,319	2,255	1,744	1,636
Net Profit	69	-13%	79	77	58	11
MECHANICAL ENGINEERING						
Workforce	20,756	+1%	20,640	20,351	20,289	20,161
Staff costs	982	+4%	945	879	826	790
FY Investment	140	+23%	114	147	94	110
Revenue	2,842	+3%	2,772	2,763	2,383	2,068
Net Profit	177	-3%	183	112	84	8
METAL ARTICLES						
Workforce	13,430	-2%	13,640	13,942	14,040	14,476
Staff costs	693	+1%	688	650	627	626
FY Investment	94	-40%	156	110	103	93
Revenue	2,715	-1%	2,739	2,721	2,385	2,086
Net Profit	146	-8%	159	134	90	25
COMPUTER AND ELECTRONIC PRODUCTS						
Workforce	8,035	+4%	7,690	7,119	6,773	6,666
Staff costs	368	+12%	330	291	268	253
FY Investment	44	-4%	46	44	48	33
Revenue	1,448	+8%	1,342	1,201	976	937
Net Profit	126	+28%	99	79	67	39
ELECTRICAL MATERIAL AND EQUIPMENT						
Workforce	9,368	+7%	8,786	8,309	8,335	8,257
Staff costs	492	+12%	440	403	376	369
FY Investment	64	+33%	48	95	34	38
Revenue	2,394	+11%	2,158	2,043	1,787	1,650
Net Profit	254	+109%	122	45	31	41
TOTAL SEVEN SECTORS						
Workforce	75,263	+1%	74,653	72,845	72,420	72,293
Staff costs	3,757	+5%	3,586	3,296	3,110	3,002
FY Investment	511	-5%	538	647	433	437
Revenue	14,764	+1%	14,642	14,199	11,907	10,601
Net Profit	905	+14%	795	565	392	137

Workforce in units, other in millions of euros. Source: Eustat.

BASQUE ECONOMY | MANUFACTURING FOCUS

THE BASQUE INDUSTRY HOLDS THE LINE

METALLURGY AND METAL PRODUCTS, ALONG WITH ELECTRICAL EQUIPMENT, POINT TO A STRONG START TO THE YEAR AFTER THE INDUSTRIAL PRODUCTION INDEX IMPROVED IN THE LAST MONTH OF 2025

Statistical information on the performance of Basque industry, available up to February 2026, shows a decline in activity which, although in some cases improves on the results of the previous year, keeps the downturn that began in 2024 in negative territory. This is the case of the Industrial Production Index (IPI) which, after falling 0.9% in 2024, recorded a further 0.6% decline for the whole of 2025.

The latest data published by Eustat indicate that this negative trend is mainly due to the performance of Energy and Intermediate Goods, which include metallurgy and the manufacture of metal products, the chemical industry, and the production of rubber and plastic products, which fell 3.3% and 1.9% respectively. By contrast, the production of Capital Goods increased 1.3% in 2025 compared with the previous year, with notable growth in the manufacture of motor vehicles, the construction of locomotives and railway equipment, and the aerospace and shipbuilding industries.

The Consumer Goods category also recorded positive performance, with the accumulated IPI for the year rising 0.9% compared with 2024, driven by the positive behavior of both durable consumer goods (+1.3%) and non-durable goods (+0.8%).

All things considered, it is worth noting that in December 2025, compared with the same month of 2024, and at a more disaggregated

Apattaerreka industrial state in Tolosa (Gipuzkoa).

level, the sectors with the greatest weight in the Basque Country's industrial structure that recorded the most significant increases in production were Electrical Material and Equipment (+5.7%) and Metallurgy and Metal Products (+5.5%).

In the absence of data for January 2026, this trend suggests a possible rebound in the metal industry during the first quarter of the year.

By territory, both Bizkaia and Gipuzkoa recorded positive cumulative annual rates of 0.3% and 0.7% respectively, while Álava was the only province to post a negative trend, with production falling by 4.5%.

Adverse factors

Unfortunately, the slowdown in industrial activity in 2025 continued the downward trend of the previous year, as a result of the persistence of several geopolitical conflicts, such as Russia's invasion of Ukraine, the new international order shaped by Trump's policies, and growing commercial competition from China.

This environment of constant uncertainty threatens to persist over time unless Europe advances in its reindustrialization objectives.

For the time being, the industrial accounts of the Basque Country (CAPV) for 2024 —the latest published by Eustat— confirmed a decline in Gross Value Added (GVA) and in turnover, although they also recorded a significant increase in investment.

Specifically, Gross Value Added at factor cost fell by 1.2%, standing at €17.337 billion, while turnover reached €68.445 billion, after declining 2.7% compared with the previous year.

The increase in investment was the positive highlight, rising 9.6% during the year to €2.7 billion, most of which was allocated to tangible fixed assets.

By sector, the Gross Value Added generated by Manufacturing Industry accounted for 91.6% of the total Basque industrial sector, increasing 1% compared with 2023 to €15.883 billion, while turnover fell 1.1% to €62.283 billion.

Meanwhile, the sector encompassing Electricity, Gas, Steam and Air Conditioning Supply recorded a 33.4% decline in GVA and a 29.2% drop in productivity.

Finally, it is worth highlighting the positive performance of the Machine Tool sector, whose GVA rose by 9%, as well as the General Machinery sector, which not only increased GVA by 10% but also recorded a 3% rise in turnover.

1%

GVA OF THE **MANUFACTURING INDUSTRY** INCREASED IN 2024

1.3%

PRODUCTION OF **CAPITAL GOODS** INCREASED IN 2025

MACHINERY MAINTAINS ITS UPWARD TREND

Basque industrial GVA rises in General Machinery, Machine Tools and Transport Equipment, while it declines in coke plants and electricity supply.

	2024	%24/23	2023	2022	2021	2020
General-purpose machinery	1,705	+10%	1,552	1,374	1,342	1,209
Rubber, plastic and other non-metallic pr.	1,539	-1%	1,551	1,461	1,372	1,193
Mechanical engineering	1,072	+6%	1,007	922	820	822
Manufacture of motor vehicles	993	-15%	1,165	1,296	1,171	603
Iron and steel / Non-ferrous metal pr.	992	-2%	1,017	955	861	791
Other transport equipment	728	+15%	633	526	487	473
Wood, paper and graphic arts	843	-1%	849	796	681	602
Electricity, gas and steam	817	-33%	1,227	1,060	814	1,393
Chemicals and pharmaceuticals	739	+6%	696	610	600	555
Electrical equipment and components	728	+15%	633	526	487	473
Food, beverages and tobacco industry	627	+10%	571	501	470	472
Water and sanitation	573	+6%	543	565	530	496
Forging and stamping	554	-3%	571	531	486	429
Computer and electronic products	521	+10%	473	411	367	332
Furniture and other manufacturing	396	+7%	370	353	337	304
Machine tools	372	+9%	341	285	271	236
Coke and refined petroleum products	251	-53%	530	1,077	279	-100

VAB (Valor añadido bruto) en millones de euros. Fuente: Eustat.

SALES OF LARGE GROUPS DECLINE

The drop in activity across most sectors –except Other Transport Equipment and Electrical Equipment– drags down the electricity sector, which falls by 23%.

	2024	%24/23	2023	2022	2021	2020
Coke and petroleum refining	7,002	-4%	7,330	9,993	5,201	3,497
Manufacture of motor vehicles	6,809	-7%	7,348	6,594	5,547	5,005
Iron, steel and non-ferrous metal products	5,861	-9%	6,423	7,381	5,687	3,698
General-purpose machinery	5,130	+3%	4,977	4,646	4,234	3,750
Electric power	4,341	-23%	5,623	8,239	5,937	4,492
Other transport equipment	3,548	+11%	3,203	2,722	2,450	2,321
Mechanical engineering	2,842	+3%	2,772	2,763	2,383	2,068
Metal products	2,715	-1%	2,739	2,721	2,385	2,086
Rubber products	2,400	-1%	2,432	2,415	2,065	1,745
Electrical equipment and components	2,394	+11%	2,158	2,043	1,787	1,650
Forging and stamping	2,146	-7%	2,319	2,255	1,744	1,636
Beverages and tobacco	1,913	+1%	1,892	1,667	1,433	1,285
Metal casting	1,724	-4%	1,788	1,738	1,398	1,164
Paper industry	1,645	+2%	1,609	1,890	1,470	1,173
Other food industries	1,513	+12%	1,356	1,483	1,244	1,229
Steel construction	1,495	-2%	1,525	1,477	1,234	1,059
Computer and electronic products	1,448	+8%	1,342	1,201	976	937
Paints and pharmaceuticals	1,428	-1%	1,445	1,297	1,187	1,018
Plastic products	1,405	-2%	1,439	1,450	1,268	1,183
Sanitation and waste management	1,060	+2%	1,044	1,070	942	794
TOTAL	**68,445**	**-3%**	**70,380**	**74,642**	**58,757**	**49,361**

Data in millions of euros. Source: Eustat

BASQUE ECONOMY | FOREIGN TRADE

GERMANY, BACK ON THE FRONT LINE

THE EXTERNAL ACTIVITY OF BASQUE INDUSTRY FELL AGAIN BY 5% IN 2025, AMID A GENERAL DECLINE IN DEMAND, ALTHOUGH GERMANY ONCE AGAIN RETURNS TO THE TOP TIER OF EXPORT DESTINATIONS

BASQUE EXPORTS FALL AGAIN

Germany regains its status as the leading destination for Basque industrial exports amid widespread declines, with the exception of the United Arab Emirates, where exports surged by 139%.

	2025	%25/24	2024	2023	2022	2021
Germany	4,443	-1%	4,475	5,168	5,023	4,132
France	4,363	-10%	4,870	4,901	5,016	4,169
United Kingdom	1,955	-17%	2,342	2,037	1,979	1,702
Italy	1,799	-0%	1,800	1,843	1,757	1,377
U.S.A.	1,759	-16%	2,101	2,762	2,300	1,616
Portugal	1,384	+0%	1,382	1,440	1,473	1,130
Belgium	1,199	-12%	1,357	1,615	1,747	1,372
Netherlands	1,101	-4%	1,152	1,340	2,043	1,421
Poland	796	+0%	793	806	740	608
Mexico	707	-17%	853	716	578	465
China	585	-25%	781	704	713	669
U.A.E.	572	+136%	242	194	210	143
Türkiye	488	-0%	488	581	568	377
Czech Rep.	448	-2%	456	511	472	348
Sweden	430	+4%	414	394	422	300
Switzerland	411	-3%	423	392	351	255
Morocco	398	+2%	389	365	354	213
Austria	364	+8%	337	374	341	285
Brazil	306	+14%	268	296	369	284
Hungary	293	+23%	238	232	233	194
Saudi Arabia	292	+18%	246	211	160	132
Canada	279	-13%	320	215	205	206
Denmark	275	+16%	237	300	266	248
Romania	274	+15%	238	263	234	181
Norway	274	-34%	413	325	326	357
Australia	261	+8%	242	188	198	157
India	233	+23%	189	194	173	159
Slovakia	215	-2%	219	231	204	168
Japan	193	+5%	185	199	157	157
South Africa	167	+23%	136	138	145	105
Finland	165	-22%	212	194	237	140
Ireland	141	+8%	131	145	122	132
Israel	139	-4%	145	266	195	129
Ecuador	135	+40%	97	100	86	56
Chile	131	+14%	115	92	103	107
Greece	118	+25%	95	101	126	85
Myanmar	118	-48%	227	11	1	4
TOTAL	**29,851**	**-5%**	**31,262**	**32,750**	**32,721**	**26,022**

2025, provisionals. Source: Eustat. Millions of euros.

International conflicts and the complex geopolitical environment that began to take shape in 2024 continued throughout the past year, spreading uncertainty across markets and keeping foreign trade operations in industry in general —and Basque industry in particular— on a downward trend.

With no data yet available for 2026, the start of the year does not appear to anticipate an immediate change in trend, and expectations are increasingly focused on the second half of the year. According to the latest figures published by Eustat, Basque industrial exports fell again by 5% in 2025, reaching a total volume of €29.851 billion, albeit with an important nuance. The end of the year brought a slight recovery in Germany's economic situation, with a corresponding impact on exports of products to that country. As a result, the German market regained its status as the leading export destination for companies in the Basque Country, a position it had lost in 2024 to France.

Overall, however, Basque industry's external activity deteriorated across all markets, with significant declines among the top ten destinations. Particularly notable was the 25% drop in sales to China, followed by the United Kingdom, where demand fell 17%, and the United States, which, after declining 16%, ceded third place to Italy, while France (-10%) ranked as the second-largest destination for Basque products.

Imports decline

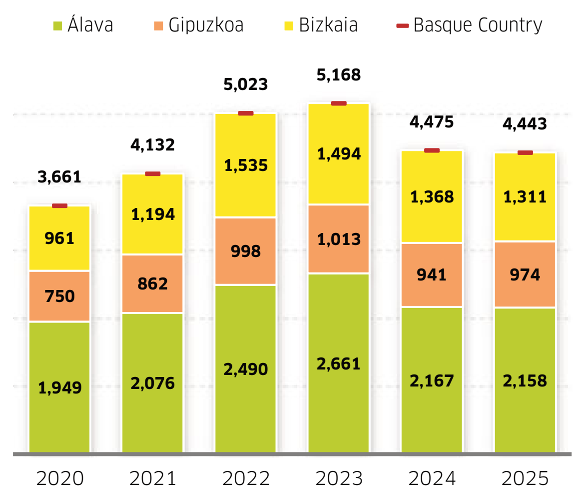
Domestic demand for Basque industry also failed to improve, with imports falling by 3% compared with the previous year, reaching €26.611 billion.

Although the significant drop in sales to France allowed Germany to regain its position at the top of the export ranking, the German market has not yet returned to positive growth in its trade with the Basque Country, after exports fell

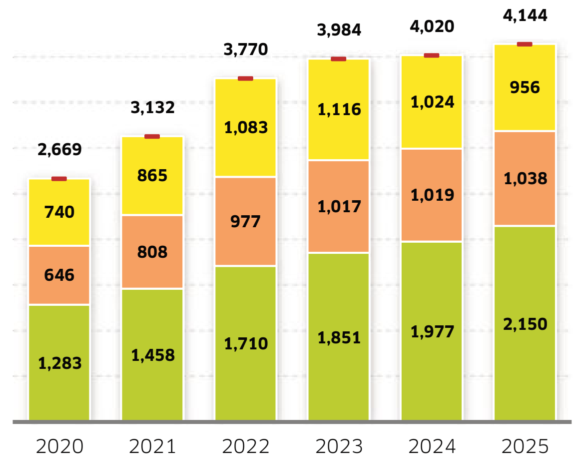
TRADE DEFICIT WITH GERMANY

Basque exports to Germany fell by nearly 1%, while imports increased by more than 3%.

EXPORTS



IMPORTS



2025, provisionals. Source: Eustat. Millions of euros.

by as much as 13% in 2024. Moreover, the final figures for 2025 show a trade deficit with Germany, as exports declined by 1% to 4.443 billion, a figure that contrasts with a 3% increase in imports of products from Germany.

Even so, the decline in Basque companies' sales to Germany softened in 2025, with Gipuzkoa even recording growth of 3.5% in exports, totaling €974 million.

Bizkaia, however, reduced sales to the German market by 4%, to €1.3 billion, as did Álava (-0.4%), the largest exporting territory, with €2.158 billion in exports.

Sectoral ranking

An analysis of the main sectors by export volume to Germany highlights once again the importance of the Machine Tool sector, whose sales rose 36% in 2025 to €120 million, as well as Other Machinery for Specific Automotive Uses, which increased 18% to €122 million.

Vehicle exports

Although the external activity of the Basque motor vehicle sector fell by 28% in 2024, commercial activity with Germany reversed course in 2025, with exports rising by 6% to 1.739 billion.

The components sector, however, experienced a more uneven performance. Despite being the second-largest export activity by volume, its exports fell by 17% in 2025 to 365 million, continuing the downward trend that began in 2024 (-2%).

In this regard, it is worth noting that 50% of Spain's component companies are located in the Basque Country, to which must be added the specific weight of Mercedes and the development of new electrification projects.

€
4,443
BILLION
EXPORTS FROM
BASQUE INDUSTRY
TO GERMANY
IN 2025

SECTORAL SALES TO GERMANY SOFTEN THE DECLINE

Among the main Basque industrial sectors, exports to Germany stand out in Motor Vehicles (+6%), Machine Tools (+36%) and Locomotives and Railway Equipment (+106%).

	2025	%25/24	2024	2023	2022	2021
Motor vehicles	1,739	+6%	1,643	2,155	1,884	1,582
Motor vehicle components	365	-17%	440	448	425	397
Other metal products	235	+1%	232	268	255	203
Rubber products	173	-25%	231	321	270	251
General-purpose machinery	161	-17%	194	190	185	167
Basic iron, steel and ferro-alloys	159	-9%	175	240	283	228
Other special-purpose machinery	122	+18%	103	74	49	41
Machine tools for metalworking and other MT	120	+36%	88	103	101	81
Precious and other non-ferrous metals	114	-11%	129	117	227	146
Other first processing of steel	110	-28%	151	203	238	166
Electric motors and generators	96	-5%	101	92	85	67
Cutlery, tools and general hardware	92	-21%	116	108	106	92
Transport equipment n.e.c.	82	-4%	86	96	94	22
Steel tubes, pipes and hollow profiles	77	-3%	79	110	120	92
Railway locomotives and rolling stock	75	+106%	36	33	21	37
Pulp, paper and paperboard	61	-9%	66	61	73	55
Other electrical equipment	52	+37%	38	33	43	45
Other general-purpose machinery	51	+6%	49	51	49	57
Other food products	51	+46%	35	39	31	15
Processing and preserving of fruit and vegetables	37	+32%	28	25	21	22
Waste collection	35	-26%	47	44	74	64
Air and spacecraft and related machinery	29	+37%	21	14	10	15
Wiring and wiring devices	27	-23%	36	20	18	13
Basic chemicals	25	-29%	35	28	30	28
Plastic products	24	+11%	22	25	27	23
Abrasive products and non-metallic minerals	21	-4%	22	26	25	25
TOTAL	**4,133**	**-2%**	**4,203**	**4,923**	**4,743**	**3,934**

2025, provisionals. Source: Eustat. Millions of euros.

THE BUSINESS SECTOR AS A DRIVER OF CHANGE

Eleven of the twenty-three transformation projects identified in the Euskadi Industry Plan 2030 are led by the private sector, reinforcing the role of business as a key engine of industrial transformation.

PROJECT	MILESTONE	STRATEGIC PRIORITY	TIME HORIZON
ScaleUp Fund	Creation in 2025 of a public-private fund to scale deep-tech start-ups in the Basque Country	Complete value chains in strategic sectors through the development of start-ups and the growth of industrial SMEs	2025-2028
Recovery of Contaminated Soils	Creation by 2028 of a treatment and recovery plant with a capacity of 150,000 tonnes per year	Develop new industrial opportunities derived from the circular economy; promote advanced and sustainable management; promote adaptation to climate change	2025-2028
Center for Advanced Robotics Solutions	Creation by 2027 of a testing and validation space for advanced robotic solutions	Promote advanced physical and digital infrastructures	2025-2028
Grid4Industry	Creation in 2026 of a business alliance for the development of state-of-the-art equipment to modernize the electricity grid	Increase the capacity and flexibility of the electricity grid	2025-2030
Recovery of Foundry Sands	Creation by 2027 of a regeneration plant for foundry sands to reduce waste and costs	Develop new industrial opportunities derived from the circular economy	2025-2028
CBTC (Communications Based Train Control)	Development by 2027 of a signaling system enabling bidirectional connectivity with railway traffic operated by ETS	Increase the technological and innovative level of companies	2025-2027
Errota Berria	Signing in 2026 of a business collaboration agreement in the offshore wind sector	Complete value chains in strategic sectors through different initiatives, including the development of start-ups	2025-2028
Decarbonization Valley	Development by 2032 of infrastructures for the decarbonization of industry, through CO2 capture and valorization as well as hydrogen use, complemented by a recycled water and oxygen network	Promote the generation of renewable energy sources; promote advanced physical and digital infrastructures	2025-2032
Compliance with the EU Cyber Resilience Act (CRA)	Creation in 2026 of a system to assess the cybersecurity level of Basque electronic products	Promote the adoption of Artificial Intelligence and cybersecurity; complete value chains in strategic sectors through different initiatives, including the development of start-ups	2025-2028
Renewable Fuels Hub	Definition and publication in 2025 of the technological roadmap for renewable fuels	Promote the generation of domestic renewable energy sources	
New Architectures for Aircraft Engines	Formalization in 2026 of a business collaboration agreement in aeronautics for the development of engines and technologies for aircraft using sustainable fuels	Complete value chains in strategic sectors including the development of start-ups; increase the technological and innovative level of companies	2025-2030

Source: Basque Gobernement.

DIGITAL TERRITORY | TRANSFORMATION

THE BEGINNING OF A NEW INDUSTRIAL CYCLE

EUSKADI TAKES A QUALITATIVE LEAP WITH THE ROLLOUT OF 23 PUBLIC-PRIVATE TRANSFORMATION PROJECTS

Euskadi has decided not to wait. In an international environment that is becoming increasingly unstable — marked by trade tensions, geopolitical conflicts and growing Asian competition— the region has chosen to anticipate change and take a qualitative leap to reshape its industrial future.

Under the slogan “More industry, better industry and fewer emissions,” the new Industry Plan 2030 sets out a roadmap to redefine the production model through the deployment of around twenty public-private transformation projects, conceived as a strategic tool to drive change and position Euskadi as a key player in Europe’s reindustrialization.

According to projections, the plan is expected to leverage €12 billion in private investment, mobilizing a total of €15.9 billion in combined public and private investment. The region will scale up to a new competitive level through these transformation projects, which are based on greater collaboration between leading companies, their supplier networks, clusters, technology centers and public administrations.

At present, 23 projects are under development, eleven of them led by the private sector, all sharing a common objective: the pursuit of higher added value and the creation of new industrial capacity.

These initiatives will act as levers to drive the priority sectors identified in the Industry Plan 2030, which are grouped into two main areas. On the one hand are the Irabazi sectors, which encompass already consolidated activities such as automotive components, advanced manufacturing, energy, metallurgy and sustainable mobility. On the other hand are the Hazi sectors, emerging areas with high potential such as aerospace, biosciences and healthcare technologies, advanced digital solutions, smart grids, energy storage and renewable fuels.

ITP AERO AND DANOBAT LEAD TWO OF THE PROJECTS

Within these two areas fall the first two transformation projects already officially presented.

Presentation of the Industry Plan 2030.

The first is being led by ITP Aero and focuses on the development of technologies for a new generation of aircraft engines aimed at sustainable commercial aviation. The second project is led by Danobat and seeks to create a new generation of high-performance industrial robots along with their associated value chain. At the foundation of this new industrial cycle is the ScaleUP Fund, a key instrument designed to scale deep-tech startups and strengthen the capacity of the industrial ecosystem to compete in global markets.

Beyond its financial role, the fund aims to address a structural weakness: the difficulty of transforming technological projects into industrial companies with sufficient scale. Through a hybrid model, the fund seeks to mobilize capital, attract talent and create a strategic support environment capable of consolidating a new generation of industrial companies.

Smart electrification

Another area where the depth of the transformation becomes evident is energy. In this field, the Grid4Industry project is emerging as a key initiative.

Its objective is to create a business alliance in 2026 to develop next-generation equipment, covering the repowering of high- and medium-voltage grids, the development of high-capacity transformers, smart substations, advanced protection systems and digital networks for electrification. Among the existing capabilities are the deployment of smart electricity meters across the grid (Bidelek Sareak), the presence of internationally recognized companies, and a well-established value chain.

Alongside this initiative, the Errota Berria project reflects the ambition to strengthen Euskadi's position in the offshore wind value chain. To this end, it envisages the signing of a business cooperation agreement in 2026 aimed at creating a specialized ecosystem for large components and operation vessels.

Environmental commitment also takes concrete form through initiatives aimed at metal recovery and the reuse of foundry sand, with the launch of a new plant planned for 2027.

DIGITAL TERRITORY | TRANSFORMATIVE PROJECTS

ITP AERO PILOTS THE AVIATION OF THE FUTURE

IT IS LEADING THE DEVELOPMENT OF THE NEXT GENERATION OF PROPULSION ENGINES WITH A €110 MILLION INVESTMENT, IN COLLABORATION WITH TWELVE COMPANIES AND SIX TECHNOLOGY CENTERS AND AGENTS FROM THE BASQUE SCIENCE, TECHNOLOGY AND INNOVATION NETWORK (RVCTI)

A new generation of aircraft engines will emerge in Euskadi through the first transformation project of the Euskadi Industry Plan 2030, led by ITP Aero under the title “New aircraft engine architectures for sustainable and competitive aviation.”

The initiative aims to reduce emissions, integrate sustainable fuels, digitalize processes and strengthen supply chains that are robust and adapted to new industrial paradigms.

The project will involve an investment of €110 million over the next three years, of which €60 million will be allocated to R&D and technological development, and it will create 800 jobs, including 200 direct positions and the remainder indirect.

ITP Aero will mobilize a squadron of twelve companies, half of them SMEs, including Egile, EIPC, Ekin, Mondragon Assembly and Ona Electroerosión.

The project will also benefit from the collaboration of the Basque aerospace cluster Hegan and the participation of six technology centers and agents from the Basque Network for Science, Technology and Innovation (RVCTI), led by Ideko, the Aeronautical Advanced Manufacturing Center (CFAA), Tecnalia and Mondragon University.

This level of collaboration will give ITP Aero the momentum to lead globally in the highly complex field of aircraft propulsion. The company will tackle the entire product development roadmap, from design and conceptualization to the integration of disruptive technologies in materials and manufacturing processes, digitalization, and advanced manufacturing with integrated AI, anticipating the regulatory requirements that will shape the next decade.

Manufacturing of aeronautical turbines at the ITP Aero plant in Zamudio.

€60 MILLION WILL BE ALLOCATED TO R&D AND TECHNOLOGICAL DEVELOPMENT

The project will foster the development of high-value production technologies while strengthening a solid local value chain. This will elevate the Basque aerospace sector to a new competitive level, enabling access to new international market niches, which is expected to translate into significant growth in technological exports, according to the transformation project.

A sector on the rise

The commitment by the aircraft engine manufacturer comes at an opportune moment. According to forecasts by the Interna-

ADVANCED MANUFACTURING

In 2025, ITP Aero inaugurated the Admire Advanced Manufacturing Aerospace Center at its headquarters in Zamudio (Bizkaia).
With a team of 150 people, the center focuses on researching new materials, developing highly complex components and enhancing repair capabilities, offering solutions aimed at addressing the rapid growth of the aviation industry.

tional Air Transport Association (IATA), air traffic is expected to grow at an annual rate of around 5%, implying the need to double the global fleet with the addition of more than 43,000 new aircraft over the next two decades.

In its ambition to play a key role in future aircraft platforms, ITP Aero is implementing an ambitious growth and investment plan.

Over the past three years, the company has invested more than 200 million and created more than 550 direct jobs in Euskadi. This effort reflects the company's strategy to strengthen its position in next-generation international programs and advance increasingly efficient and sustainable technologies.

Under this roadmap, the company plans to continue reinforcing its commitment with sustained investment, allocating €600 million in CapEx and another €600 million in R&D through 2030, according to its CEO, Eva Azoulay.

DANOBAT

High-precision robot developed by Danobat.

DIGITAL TERRITORY | TRANSFORMATIVE PROJECTS

ROBOOST REINVENTS MANUFACTURING

THE PROJECT LED BY DANOBAT REDEFINES CONVENTIONAL PRODUCTION PROCESSES THROUGH THE DEVELOPMENT OF A NEW GENERATION OF HIGH-PRECISION ROBOTS AND THEIR VALUE CHAIN

Basque industry aims to break with traditional manufacturing standards through the development of a new generation of robots that combine the precision of machine tools with the flexibility of robotics.

This is the objective of the Roboost transformation project, led by the Danobat cooperative to address a key technological gap in advanced manufacturing.

The approach of this transformation project goes beyond incremental improvements, aiming instead to create a new category of industrial solutions capable of transforming production processes in sectors such as aerospace, automotive, energy and capital goods.

The initiative will mobilize nearly €50 million over the next three years, of which more than €35 million will be devoted to R&D, and it is expected to generate 500 jobs, both direct and indirect.

Roboost is based on a diagnosis widely shared across the manufacturing sector: there is a technological gap between machine tools and conventional industrial robots that limits the automation of highly demanding processes.

While machine tools ensure precision, stability and rigidity, industrial robots provide flexibility but do not achieve the necessary performance levels for critical operations.

To close this gap and move beyond conventional processes, the transformation project will bring together capabilities that, "only through coordinated collaboration will allow progress in a manufacturing technology area that has so far remained unresolved," enabling the industry to address "a new space of opportunity," according to Danobat CEO Xabier Alzaga.

Value chain

Roboost stands out for its collaborative dimension and its driving effect across the entire industrial ecosystem. It involves 18 SMEs, including Lazpiur, Zuazo, Sariki, Funsan, MYL, Exom, Izadi, Sisteplant, MB Sistemas and Aldakin, as well as the companies Etxetar, Fagor Automation, Fagor Arrasate and ITP Aero, together with an extensive network of suppliers and auxiliary companies.

The project also includes the participation of around ten Basque technology centers and agents from the Basque Network for Science, Technology and Innovation (RVCTI) —such as Ikerlan, Lortek and Vicomtech, led by Ideko— and is supported by the AFM and Hegan clusters.

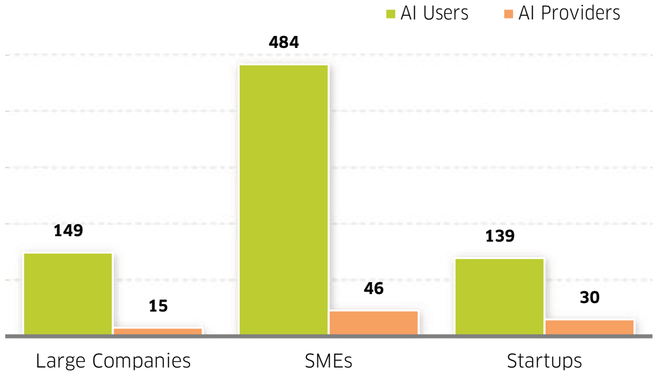
With this level of collaboration, the partners will develop over the next three years the entire value chain surrounding this new generation of robots, covering everything from research to industrialization, integrating industrial capabilities, applied knowledge and specialized talent to accelerate their market deployment.

Framed within the Euskadi Industry Plan 2030, the project will strengthen Euskadi's position in the emerging niche of high-precision industrial robotics, while generating new industrial capabilities and enhancing the sector's international competitiveness.

THE PROJECT WILL CREATE 800 JOBS

PROVIDERS FALL SHORT OF DEMAND

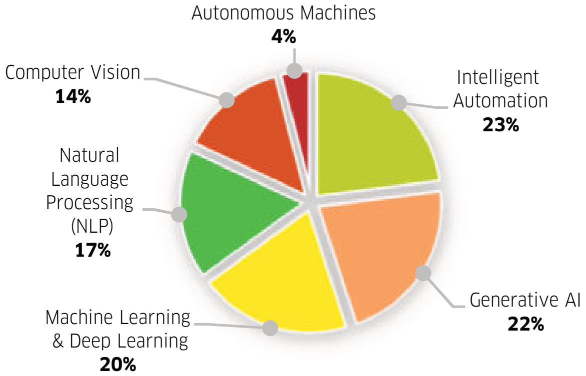
The one hundred Basque AI providers appear insufficient to meet the needs of the 17% of Basque companies with more than ten employees already using these technologies, a proportion that continues to grow.



Source: BAIC. 2024 data.

AUTOMATION TECHNOLOGIES DOMINATE

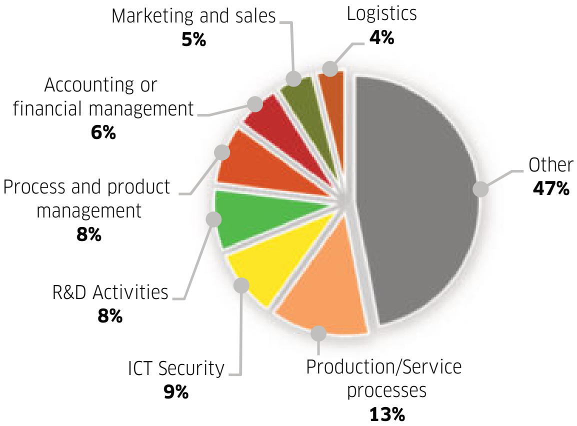
Among the AI technologies most in demand by Basque companies, intelligent automation leads, followed by generative AI and the Machine Learning branch.



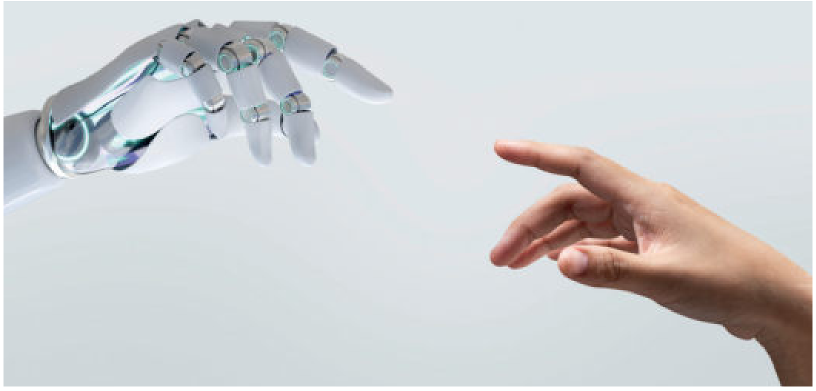
Source: BAIC. 2024 data.

USAGE FOCUSED ON INDUSTRY

Basque companies mainly use AI for production and service processes, ICT security, R&D activities and production process organization.



Source: Eustat. Data from July, 2025.



Intelligent automation, which gives cognitive capabilities to robotics, is the most widely used application.

DIGITAL TERRITORY | ARTIFICIAL INTELLIGENCE

AN EXPANDING ECOSYSTEM

EUSKADI HAS AROUND ONE HUNDRED AI PROVIDERS FOCUSED ON MANUFACTURING AND DATA ANALYSIS

The Basque AI ecosystem continues to expand, with around one hundred companies supplying AI systems and 17.4% of companies with more than ten employees already using these technologies, according to Eustat data for 2025.

More than 50% of the companies forming the ecosystem built around AI in Euskadi are SMEs, while 16% are large corporations and 33% are startups. Together they provide a comprehensive range of solutions, from agentic AI applied to the metal sector and industry developed by Lantek, to compressed language models tailored to specific sectors such as healthcare or finance developed by the scale-up Multiverse Computing.

Between these extremes lies a wide range of companies specializing in AI platforms and data analytics, including Hupi Ibérica, PowerfullTree and Data Value Management. Companies specializing in computer vision also stand out, such as Neurolabs and Nuavis, which convert images into data to deliver advanced logistics and quality control solutions. Others, such as Ariadna Grid, which has developed a platform to monitor the electricity grid, or Microbiomik, which applies its solutions to the biotechnology sector, have a marked sectoral specialization.

There is also a new generation of rapidly expanding startups, including Innitius, Zenialabs, Cultzyme, Surphase, Inalia and Psifiacos.

AI provider companies in Euskadi generated €223 million in revenue in 2024, representing a 112% increase compared with the previous year. Total investment by Basque stakeholders in this technology reached €557 million, according to data from the Basque Artificial Intelligence Center, which promotes AI adoption among Basque companies. Around 93% of Basque stakeholders plan to invest in AI in the future. The impact of AI can already be measured in Basque companies, with a 9% increase in total revenue among those that have implemented it.

THE SECTOR GENERATED MORE THAN €220 MILLION IN REVENUE

This development is also reflected directly in employment, with 9,500 professionals working in AI in Euskadi and 1,887 people integrated into research groups. It is estimated that AI professionals will represent 25% of the total Basque professional workforce in the coming years. As for the technologies most widely used by companies, intelligent automation (RPA + AI) leads with 23%, aimed at providing cognitive capabilities to robots. It is followed by generative AI (22%), Machine Learning & Deep Learning (20%), computer vision (14%) and autonomous machines (4%).

DIGITAL TERRITORY | ADVANCED MANUFACTURING

PROACTIVE FACTORY ANTICIPATES THE INTELLIGENT FACTORY

AI IS THE CORNERSTONE OF TECNALIA'S NEW ADVANCED MANUFACTURING LABORATORY

Tecnalia is moving ahead of the intelligent factory of the future with the launch of its new advanced manufacturing laboratory, "The Proactive Factory Lab."

This infrastructure has been designed to anticipate and accelerate the transfer of technology to industry, at a time when demand for advanced solutions is growing by between 8% and 10% annually.

The technology center has increased its capabilities by 62%, creating a real production environment covering 1,241 square meters, where companies can test, validate and scale technologies under conditions close to industrial deployment.

The objective is to reduce development times, minimize the so-called "valley of death" between research and industrial scaling, and improve the maturity of solutions before they reach the market, facilitating their adoption in sectors such as machine tools, automotive, aerospace and energy.

TECNALIA

Presentation of the new advanced manufacturing laboratory.

The laboratory, open to companies of all types, structures its activity around three main areas: Advanced and intelligent robotics, design and optimization of intelligent machines and smart production processes

These capabilities allow companies to address the challenges of advanced manufacturing in a comprehensive way, from flexible automation to the continuous optimization of processes such as machining, welding or additive manufacturing.

The brain of the factory

The distinctive element of the laboratory is the "Proactive Center," an AI-based system that acts as the digital brain of the factory.

This core integrates specialized intelligent agents that coordinate machines, processes and operations, from planning to maintenance and logistics, with the capacity to analyze context, anticipate needs and optimize the overall performance of the production system.

AI thus becomes the cornerstone of the laboratory, enabling more autonomous, flexible and connected environments. This involves integrating AI at different levels: from specialized AI and highly specialized intelligent agents to Omnia, an innovative ecosystem of intelligent agents capable of understanding context, anticipating needs and complementing human capabilities.

With the launch of The Proactive Factory, Tecnalia sets the pace toward more aware, flexible and autonomous factories, reducing by 15% the time between laboratory innovation and its scaling to industrial plants. Many of the projects developed by the center are carried out in collaboration with leading companies such as Ibarmia, Irizar Forge, smartPM, Amets, Ideable, Aceros Olarra, MTorres, Nicolás Correa, Astilleros Murueta and Zeatz.

DIGITAL TERRITORY | QUANTUM ECOSYSTEM

FROM THE CHIP TO THE SILICON QUBIT

CIC NANOGUNE TACKLES THE DEVELOPMENT AND SCALING OF SILICON-BASED QUANTUM CHIPS IN ITS NEW QUANTUM TOWER, IN COLLABORATION WITH THE BRITISH COMPANY QUANTUM MOTION

CIC nanoGUNE has taken a decisive step in its commitment to quantum technologies with the inauguration last February of its Quantum Tower in San Sebastián, an infrastructure designed to lead the development of advanced quantum hardware and consolidate the Basque Country as a relevant node in the field.

The new building houses nanoGUNE's quantum hardware research group, led by Ikerbasque researcher Fernando González-Zalba, which since 2024 has collaborated with the British company Quantum Motion on the development of silicon-based quantum computing devices, the same technology that underpins the microprocessors used in conventional computers, mobile phones and vehicles.

CIC NANOGUNE

Dilution refrigerator in the nanoGUNE laboratory.

THE TOWER HOUSES ADVANCED LABORATORIES

The Quantum Tower comprises approximately 1,500 square meters built across seven floors, two of which have been fitted out in the initial phase. These spaces host both laboratories dedicated to nanoGUNE's quantum hardware research activities and office space housing the subsidiary established by Quantum Motion in San Sebastián.

One of the key elements of the new facilities is the installation of two dilution refrigerators, capable of reaching temperatures close to absolute zero, around 10 millikelvin, even lower than those of outer space.

Under these extreme conditions, thermal noise is drastically reduced and quantum effects emerge, allowing them to be measured and controlled with great precision. Thanks to these systems, it will be possible to develop quantum computers that use chips manufactured with industrial semiconductor technology.

In particular, the project focuses on silicon-based quantum processors, given their capacity for large-scale integration, which will make it possible to reach the computational power required to execute quantum algorithms.

A third system will be added to these two refrigerators after Fernando González-Zalba received a Consolidator Grant from the European Research Council (ERC). The facilities have the capacity to host up to six refrigeration systems in total, meaning the tower will house one of the most advanced ultra-low temperature laboratories in southern Europe.

Quantum Motion, a key player

The British company Quantum Motion is strengthening its European growth strategy through the establishment of a subsidiary in the Quantum Tower, from where it has outlined a roadmap to create, together with CIC nanoGUNE, a center for the assembly and production of quantum computers for global distribution.

Quantum Motion's arrival in San Sebastián dates back to the collaboration agreement it signed with nanoGUNE two years ago for the joint development of silicon-based quantum chips. Since then, the partners have embarked on a first five-year phase focused on the development, validation and technological demonstration of quantum processors and computing systems.

This work involves designing and testing new generations of silicon quantum chips, as well as progressively increasing the number of qubits per processor. The teams will also work on the integration of processors into complete systems.

In a second phase, the initiative will move from the laboratory to industrial scale, enabling the global distribution of high-performance quantum computing systems.

Quantum Motion has already reached important milestones in the initial development phase, having sold and installed its first quantum computer—a 4-qubit system—at the United Kingdom's National Quantum Computing Centre, representing a first step in its strategy for demonstration and commercialization.

The company develops and deploys full-stack quantum computers manufactured using standard 300-mm CMOS wafer technology, widely used in the semiconductor industry, with the aim of delivering commercially viable, industrial-scale and fault-tolerant systems.

A key component of this approach is the development of cryoelectronics, which integrates qubits with classical control circuits capable of operating at extreme cryogenic temperatures, enabling massive scaling of quantum processors.

Fault-tolerant quantum computing will make it possible to run more powerful quantum algorithms, aimed at solving problems that are currently unsolvable in fields as diverse as chemistry, materials science, medicine and artificial intelligence.

IREKIA

IBM Quantum System Two supercomputer.

DIGITAL TERRITORY | QUANTUM ECOSYSTEM

IBM OPENS A NEW TECHNOLOGICAL ERA

THE LAUNCH OF THE IBM QUANTUM SYSTEM TWO COMPUTER IN SAN SEBASTIÁN POSITIONS EUSKADI AS AN INTERNATIONAL BENCHMARK IN QUANTUM COMPUTING

San Sebastián has become one of the global epicenters of advanced technology following the commissioning of the IBM Quantum System Two supercomputer, one of the most sophisticated quantum computers on the planet.

With this installation, named IBM-Basque Country, the capital of Gipuzkoa joins the Japanese city of Kobe as one of the few locations worldwide hosting an infrastructure of this kind. The IBM Quantum System Two, located in the new Ikerbasque building at the IBM-Euskadi Quantum Computing Center, is the second installation of this type outside the United States.

The IBM Quantum Heron processor with 156 qubits powers the system, representing one of the most advanced quantum processors developed by the company to date.

Designed to scale and integrate multiple processors in the future, the system marks a technological milestone, enabling the execution of utility-scale algorithms that exceed the capabilities of classical simulation.

COMPANIES IN THE REGION WILL USE THE COMPUTER

Part of the Basque Quantum strategy, the arrival of the supercomputer represents a qualitative leap for Euskadi, positioning the region at the forefront of quantum computing. The system is also expected to generate a significant pull effect for talent and industry, since its proximity will facilitate access for companies and research centers, driving the development of new technological solutions and strengthening the competitiveness of the industrial ecosystem. In the coming months, companies and technology projects in the region are expected to begin using the IBM quantum computer, benefiting from its computational capacity in real-world applications.

This will be the first time the system is used beyond purely scientific and research purposes. Quantum technology promises to revolutionize key sectors thanks to its ability to solve complex problems at unprecedented speed, opening new possibilities in areas such as materials design, pharmaceutical research and artificial intelligence.

Empresa XXI
March, 2026

PETRONOR

Interior of the 2.5 MW electrolyzer installed by Petronor.

ENERGY TRANSITION | DECARBONIZATION

AN ECOSYSTEM AROUND H2

THE BASQUE HYDROGEN CORRIDOR BRINGS TOGETHER 75 STAKEHOLDERS DEVELOPING 61 PROJECTS TO DEPLOY THIS RENEWABLE ENERGY SOURCE

Euskadi has built a comprehensive ecosystem around green hydrogen through the Basque Hydrogen Corridor (BH2C), an initiative devised by the petrochemical company Petronor and its parent company Repsol.

In addition to these companies, the initiative currently includes 8 institutions, 14 knowledge centers and business associations, and 53 companies.

The investment planned by the members of this initiative through 2030 amounts to 900 million, with the objective of reaching an electrolysis capacity of 132.5 megawatts (MW) and producing around 21,000 tonnes of renewable hydrogen annually, avoiding the emission of 200,000 tonnes of carbon dioxide over the period.

The initiative focuses on developing renewable hydrogen production as well as the infrastructures and applications required for the deployment of the corridor itself. Currently, 61 projects at different stages of maturity are being carried out within the BH2C framework, covering the entire hydrogen value chain.

These initiatives are grouped around the different segments of that value chain, beginning with production, followed by transport, distribution and storage, and finally industrial and mobility applications.

Slightly more than half of the initiatives —55%— are related to the deployment of hydrogen, while the rest correspond to R&D&I projects.

Most of the ongoing projects are focused on hydrogen production. The first milestone was achieved several years ago with the commissioning of Euskadi's first electrolyzer.

Promoted by Petronor and built by Sener and John Cockerill, it has an installed capacity of 2.5 MW and represents the first step toward a larger 10 MW electrolyzer, promoted by Basque Hydrogen, Petronor, Repsol, the Basque Energy Agency (EVE) and Enagás.

€ 900

MILLION IN **PLANNED INVESTMENT**

This facility is currently under construction at Petronor's decarbonization hub in the Port of Bilbao, and it is expected to become operational during the first half of next year.

Its production will supply the synthetic fuels plant that Petronor-Repsol, together with Aramco, is building in the Bilbao port area with an investment of €146 million, which is also expected to become operational in the first half of 2027. Petronor has also recently begun preparing the site where it plans to build a pressurized alkaline electrolyzer with a capacity of 100 MW, manufactured by a European supplier.

The project involves an investment of 292 million and aims to begin operations in the first half of 2029. The facility will be located at the refinery itself and will be made available to all industrial stakeholders within the Basque Hydrogen Corridor, as it will be connected to its hydrogen pipeline infrastructure. However, while the distribution infrastructure is being developed, the Petronor refinery will remain the main consumer of its production.

Other ongoing projects related to the deployment of green hydrogen include, among others, a project promoted by Tecnalia to investigate innovative technologies and key components for generating renewable synthetic fuels and converting ammonia into hydrogen at competitive costs, and the phased establishment of an electrolyzer manufacturing plant by Sener.

Similarly, H2Site launched in 2022 the world's first manufacturing plant for palladium alloy membranes, designed to produce hydrogen from ammonia or methanol and to separate hydrogen from gas mixtures.

Other outstanding projects

Among the remaining 61 initiatives, notable examples include a pure hydrogen distribution pipeline developed by Nortegas, hydrogen transport and supply solutions from Calvera Hydrogen, a hydrogen refueling station for vehicles promoted by Ibil, Repsol and the Basque Energy Agency (EVE), a hydrogen purity and electrolysis laboratory implemented by Bureau Veritas, the development of hydrogen fuel cell and battery propulsion systems for passenger trains by CAF, the development of a hydrogen commuter-regional train by Talgo, and a project promoted by Irizar to develop a long-distance bus range based on fuel cell technology.

ENERGY TRANSITION | DECARBONIZATION

EIC, A KEY PIECE OF THE STRATEGY

PROGRESS ON A HUB FOR THE DEVELOPMENT OF RENEWABLE FUELS AND THE DESIGN OF A SUSTAINABLE MOBILITY ECOSYSTEM

Main building of the Abanto Technology Park, which houses the EIC.

The development of a strong and strategic industrial base in Euskadi, capable of responding to Europe's need to strengthen its productive, technological and energy autonomy, goes hand in hand with efforts to achieve the European Union's sustainability objectives for the coming years.

In this context, the Basque innovation center Energy Intelligence Center (EIC) is working on the development of technological solutions to decarbonize the economy, which not only contribute to emissions reduction targets but also strengthen the Basque industrial ecosystem within the energy transition. This is an area where the region benefits from major leading companies such as Iberdrola and Petronor, supported by a strong and comprehensive value chain.

The EIC, which functions as a collaborative R&D&I platform, is currently advancing three strategic projects: A decarbonized mobility ecosystem, a hub for the development of renewable fuels and the decarbonization of the most complex sectors, such as heavy industry and transport.

The center —whose partners include the Provincial Council of Bizkaia, the Basque Energy Agency (EVE), the Basque Hydrogen Corridor, and companies such as Petronor, Nortegas and the Energy Advanced Engineering Foundation (formed by Tubacex, Tubos Reunidos, Ampo and Vicinay)— is testing a green hydrogen-based decarbonized mobility ecosystem at its headquarters in the Abanto Technology Park (Bizkaia), designed to function as a large-scale demonstration project.

The system, built through various technologies, will use the hydrogen produced by Petronor for the production of synthetic fuels to meet the EIC's own energy needs.

The connection between the Muskiz refinery and the center will be made via a hydrogen pipeline built by Nortegas, which will be connected to a fuel cell to generate electricity. The second phase involves the construction of a 10 MW electrolyzer on land at the Port of Bilbao. At the same time, a hydrogen refueling station for H2-powered vehicles is being built next to the EIC headquarters.

Regarding the project for a Basque hub to develop renewable fuels, the EIC has completed the first phase of the roadmap, identifying 28 technological lines aligned with the H2, CO2, and synthetic and renewable fuels vectors, aimed at supporting future industrial projects in this field.

A total of 45 public and private entities participated in this process. In the case of the Hard to Zero project, the aim is to facilitate the decarbonization of "hard-to-abate" sectors such as steelmaking and refineries, for which around fifteen companies are working on hydrogen, CO2, oxygen and recycled water solutions.

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MORE THAN A THOUSAND BASQUE STARTUPS

Bizkaia leads the ecosystem of operational startups in the Basque Country followed by Gipuzkoa and Álava.

Source: Oficina Nacional de Emprendimiento (ONE). UP! Euskadi data, May, 2025

SPIN-OFFS MULTIPLY

The number of spin-offs created by universities and technology centers increased exponentially in 2025.

	2025	%25/24	2024
Accelerators	43	0%	43
Spin offs	982	+698%	123
Corporates	2,747	+3%	2,663
Investment Agents	228	+10%	208
Educational Institutions	23	0%	23
Public Entities	81	+4%	78

Source: ONE. Jan, 2026.

HEALTH AND ENERGY ADD MORE STARTUPS

Biotech and cybersecurity lead the revenue ranking among emerging sectors in 2025.

	COMPANIES	WORKFORCE	REVENUE
EHealth	76	930	38,750
Biotech	47	1,099	134,500
4.0 Industry	49	672	46,000
Energy	54	877	58,250
Foodtech	33	430	17,750
Cybersecurity	33	825	66,500
SaaS	60	797	33,000
AI	32	541	23,250
Edtech	22	222	10,750
Mobility	20	345	55,750

Revenue in millions of euros. Source: UP! Euskadi.

THE BASQUE COUNTRY RANKS THIRD AMONG SPANISH REGIONS BY INVESTMENT VOLUME

ENTREPRENEURIAL ECOSYSTEM | GROWTH LEVER

TECHNOLOGY ENCOURAGES ENTREPRENEURSHIP

THE GROWING TREND TOWARD TECHNOLOGY -AND INNOVATION-DRIVEN BUSINESSES HAS DYNAMIZED THE ENTREPRENEURIAL ECOSYSTEM IN RECENT YEARS, BOOSTING INVESTMENT IN STARTUP CREATION

The reindustrialization process that European regions —including the Basque Country— must undertake in order to regain strategic autonomy requires a cultural and social base of entrepreneurs capable of revitalizing a business and industrial fabric that has weakened in recent years.

However, the vocation and effort required to launch an entrepreneurial project have not yet fully taken root, influenced by a strong and persistent fear of failure. Although the Basque Country has a favorable ecosystem of support agents and infrastructures for entrepreneurs, the evolution of the Entrepreneurial Activity Rate (TEA) —which rose to 6% in 2024— still falls below the Spanish average (7%) and the European average (9%), according to the latest Global Entrepreneurship Monitor (GEM) report. In addition, the percentage of the population intending to start a business within the next three years (6.8%) continues to trend downward.

On the positive side, however, there has been sustained growth in the creation of new companies, an increase in the per capita startup creation rate, a reduction in the gender gap, and improved survival rates of entrepreneurial projects.

According to the latest Basque Entrepreneurship Barometer, published by the Basque Government, which analyzes 67 indicators, entrepreneurial activity in the Basque Country has shown favorable progress in recent years.

1,200
INNOVATIVE STARTUPS MAKE UP THE ECOSYSTEM

Among the most notable positive contributions are the growing share of entrepreneurial businesses with more than five employees, total investment in startup funding rounds, the share of TEA associated with job creation, and the 228 companies incubated in public infrastructures, which reached their historic high in 2024.

GAIA

Another notable element is the volume of investment attracted, which surged in 2025. According to data from ONA and Up Euskadi, the Basque Country now ranks third nationally in terms of investment volume, with the technology and software sectors receiving the largest share.

In this context, entrepreneurship must become a fundamental lever for Euskadi's sustainable industrial transformation, through the creation of new innovative companies in critical technologies, priority sectors and strategic value chains.

Technology-based companies

Focusing specifically on new technology- and innovation-based companies (NEIBTs), the Basque ecosystem includes around 1,200 active startups with a combined valuation of 1.9 billion. According to Up Euskadi, around 100 NEIBTs are created each year. Of the active startups, 1,088 were founded between 2013 and 2024.

Together they employ 5,745 people and generate €724.6 million in revenue.

BASQUE INDUSTRY EMBRACES AI

Of the 25 startups from around the world selected in the 10th edition of the Basque Government's BIND open innovation program, 10 are Basque (7 from Gipuzkoa and 3 from Bizkaia), most of which will develop projects related to AI, IoT and Clean Tech technologies.

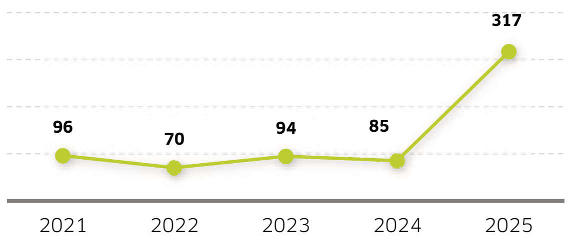
STARTUP	PARTNER	PROVINCE	SECTOR	TECHNOLOGY
Acuratio	Viuda de Sainz	Gipuzkoa	Health	AI, Big Data, Health Tech
Emaia Health	Keralty	Gipuzkoa	Health Tech	Health Tech, AI
Isso Technologies	Ansareo	Bizkaia	Smart Manufacturing, Clean Energy, Sustainability	AI, Software, Wearables
Innkia	Orona and Uvesco	Gipuzkoa	Smart Manufacturing	AI
Neety	Arania and Betsaide	Gipuzkoa	Smart Manufacturing	AI, Software, Wearables
Nneat	Elecnor	Bizkaia	Smart Manufacturing	Cybersecurity
Photokrete	Eika	Bizkaia	Energia limpia y sostenibilidad	New Materials
SmartPM	Ormazabal Velatia	Gipuzkoa	Smart Manufacturing, Clean Energy, Sustainability, Health Food	Collaborative Robotics, Connectivity, IoT and Software
Trebezia	Uvesco	Gipuzkoa	AI	Smart Manufacturing, Machine Vision, Collaborative Robotics
Zeru Drones	GH Cranes	Gipuzkoa	Smart Manufacturing, Clean Energy, Sustainability	AI, Collaborative Robotics, Software

Source: SPRI.

The Gaia Aktibatu strategic project promotes a model that anticipates future talent needs.

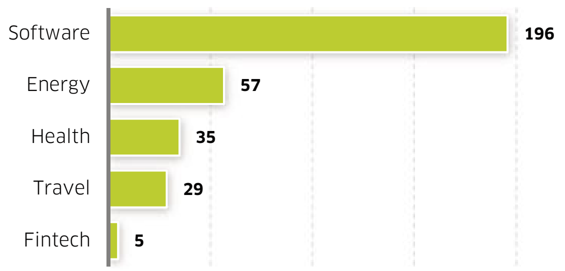
STARTUP INVESTMENT TAKES OFF

Investment raised in the Basque Country for startup creation surged by 272% in 2025.



SECTORS BY INVESTMENT VOLUME

The software sector attracts the largest inflow of capital for the creation of new companies, well ahead of the energy sector.



Millions of euros. Source: Enisa

PIE 2028, A NEW ENTREPRENEURSHIP FRAMEWORK

In December 2025, the fourth Basque Interinstitutional Entrepreneurship Plan (PIE 2025–2028) was presented as a complementary and acceleration instrument for the Industry Plan – Euskadi 2030, facilitating the emergence of new companies in strategic industrial sectors, critical technologies and priority value chains. With an annual budget of between €85 million and €90 million, the new PIE emphasizes the need to promote a "new entrepreneurship" capable of responding to the challenges of the global environment, characterized by geopolitical conflicts, protectionism, economic instability, technological acceleration and growing competition among regions.

The aim is to support entrepreneurs capable of developing new technologies, business models and emerging opportunity sectors.

From Euskadi, this objective is being pursued through several initiatives: Greater international openness to promote and attract talent; Professionalized acceleration of startups; New venture-building processes to identify and manage technology-based opportunities; The emergence of new financial instruments, investors and support agents; New connection and ecosystem-building infrastructures; and the continuous improvement of the fiscal framework.

To achieve these goals, the plan foresees 793 public-private collaboration actions, with a focus on improving processes, services and support programs, as well as strengthening entrepreneurial culture, values and idea generation.

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SURVEY | AUTOMATION

A STRATEGIC NECESSITY

AUTOMATION HAS CEASED TO BE A COMPETITIVE ADVANTAGE AND HAS BECOME A KEY FACTOR, DRIVEN BY THE SHORTAGE OF TALENT, PRODUCTIVITY IMPROVEMENTS AND QUALITY CONTROL

Automation has become the backbone of the production process, driven through robotic solutions, the integration of computer vision systems and embedded AI.

Ignacio Iraolagoitia (Ingemat), Sergio Bilbao (Ingenersun), Miguel Ángel Zaratiegui (Aldakin), Asier Garayar (Gaitek) and Borja García (MB Sistemas) analyze the challenges it poses, its expansion into new sectors, the incorporation of advanced technologies to enhance its capabilities, as well as its value when it comes to adapting production to a market and a demand that are in perpetual motion.

> In a context marked by global competitiveness, cost pressure and labor shortages, how is demand for automation projects evolving?

Ignacio Iraolagoitia / Ingemat

Demand continues to grow, not only because of cost pressure or the lack of labor, but because in some sectors automation has already become a necessary condition for undertaking new programs. This is the case in the aerospace sector, where demand growth cannot be sustained with current levels of automation. In many sectors and developed countries, automation is no longer implemented only to be more efficient, but in order to respond to production needs.

Sergio Bilbao / Ingenersun

Demand for automation remains stable, as it provides responses and solutions to many areas of production: process safety, quality and traceability, the ability to carry out processes that would otherwise not be possible, cycle times, etc.

Asier Garayar / Gaitek

Automation has ceased to be a competitive advantage and has become a strategic necessity. Companies not only face cost pressure: they need to produce on demand, reduce stock and respond quickly to changes in production volume or product mix. Competitiveness is no longer achieved only by producing more cheaply, but by producing better and faster.

The focus is shifting toward operational flexibility and process stability. The integration of computer vision and in-line control systems guarantees quality and traceability at different points of the value chain. By freeing operators from repetitive tasks or tasks involving ergonomic risk, companies can redirect them toward higher value-added functions.

At Gaitek we approach each project from a global view of the process: we analyze, design and deliver turnkey solutions that integrate into existing lines and active production environments, minimizing disruption and maximizing returns from the very first day.

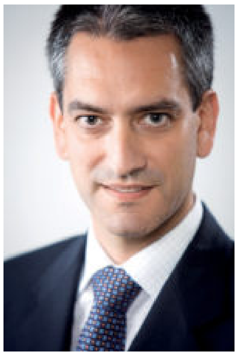
IGNACIO IRAOLAGOITIA

Global Sales Manager at Ingemat

"SCALABLE AND FLEXIBLE SOLUTIONS ARE IN DEMAND"

SERGIO BILBAO

Commercial Director at Ingenersun



"IT IS INCREASINGLY PRESENT IN MORE SECTORS"

Miguel Ángel Zaratiegui / Aldakin

Demand for automation projects continues to grow steadily. From Aldakin's experience, industrial companies turn to automation not only to improve productivity, but also to ensure process stability, consistent quality and the capacity for growth in a context of strong competitiveness and a shortage of qualified labor. Automating has become a strategic decision to maintain market position.

Borja García / MB Sistemas

The automotive sector, which is the one in which we mainly work, is currently marked by the scarcity of new projects in Europe. However, there are increasing Chinese projects seeking to establish themselves in Europe, such as Ebro or LEAP Motor, and others that we will see arriving in the near future.

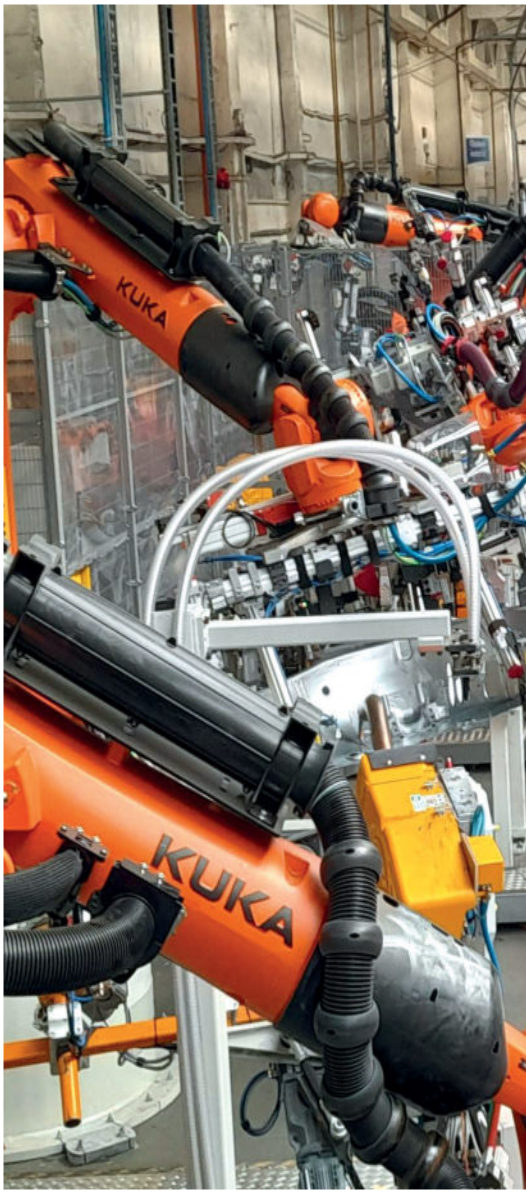
Chinese clients come with their own automation companies, which forces us to adapt to the gaps they leave. In other words, we must focus on offering greater proximity to the customer, more engineering services and automation work where we can differentiate ourselves through quality and service.

In general terms, automation is growing across industry, which demands that all repetitive work and physically demanding work be automated, for example through the use of humanoids to carry out loading or unloading tasks.

> What factors are driving automation in industry? In which sectors?

Sergio Bilbao / Ingenersun

Automation is now focused precisely on replacing labor in processes that do not add value to the product, and on quality control and product traceability. At the moment automation is not the answer to production capacities, which are a headache, particularly in the automotive sector, due to the complex panorama created by the emergence of the Chinese market.



Automotive is the key sector, and has always been so, in the field of automation, but currently and given the stagnation of certain projects there are other sectors gaining prominence because they themselves had begun to automate processes.

Thus, for example, the food, pharmaceutical and electrical sectors are expanding their automation capacities. The same is true of steelmaking, foundries and surface treatments, since they are also diversifying their client portfolios beyond automotive.

Ignacio Iraolagoitia / Ingemat

The shortage of technical talent, pressure to improve productivity and the need to ensure consistent quality remain the main drivers. Automotive and electronics probably continue to lead investment, but sectors such as food, aerospace and defense are increasing their level of automation exponentially, driven by demand growth and, in the case of defense in particular, by the need for greater industrial capacity.

Miguel Ángel Zaratiegui / Aldakin

The main factors are the lack of specialized personnel, increasing process complexity and the need to reduce production variability.

As specialists in advanced automation, at Aldakin we observe growing demand in sectors such as aerospace, automotive, energy and capital goods, where precision, repeatability and flexibility are decisive for competing.

Asier Garayar / Gaitek

Several factors converge to accelerate its adoption: increasingly strict quality requirements, the need for traceability and digitalization, ergonomic improvement and risk prevention, and an environment of shorter production series with greater product variability.

Historically led by automotive and metal-mechanical industries, demand is now spreading strongly to food, pharmaceutical and high value-added industrial components; sectors where the requirements for control and repeatability are particularly demanding and the margin of error practically nonexistent.

The most relevant aspect is the scope it has taken within the production process: it is no longer limited to handling operations, but is integrated into in-line quality control, assembly and interconnection between machines.

Automation has become the backbone of an efficient and resilient process, not a one-off improvement.

Borja García / MB Sistemas

In automotive, where we mainly position ourselves, automation is fundamentally applied to the assembly of car body components.

In other sectors such as railway manufacturing, where the dimensions are different and the manufacturing process is simpler, automation is still timid and slow, although it will arrive.

> From your experience, what is changing in industrial automation and what will change in the next five years?

Ignacio Iraolagoitia / Ingemat

We are moving from isolated solutions to integrated systems that also incorporate internal logistics within the production process.

Scalability and flexibility are today critical factors in the face of uncertainty in volumes that did not exist before. Over the next few years we will see more flexible, modular, scalable and reusable solutions, capable of adapting to different scenarios while minimizing investment risk.

Sergio Bilbao / Ingenersun

What mainly changes are the sectors, as I mentioned earlier. This leads clients to demand a different type of service, because since they are not accustomed to automating as in the automotive sector, they require you to accompany them in defining the process for its automation.

In the coming years AI applied to computer vision, for example, will represent a major leap forward that will allow very high levels of quality control in manufacturing. In fact, we are already involved in an automotive project with computer vision and deep learning.

Asier Garayar / Gaitek

Automation is being approached with greater pragmatism. It is not always a complete transformation: many times the challenge lies in stabilizing a specific phase where variability or risk is concentrated. That well-resolved focus can have a disproportionately positive impact on the overall process.

What is changing structurally is the level of integration: mechanics, control, vision and data working in a coordinated manner, connected to the real production environment.

In the next five years AI will consolidate its role in inspection, parameter optimization and predictive analysis, anticipating deviations before they affect production.

It does not replace engineering; it enhances it. The real value lies in integrating it with sound judgment within a real process. That is where the difference lies between a solution that works in the laboratory and one that works on the factory floor.

Miguel Ángel Zaratiegui / Aldakin

Automation is evolving from solutions focused on specific tasks toward integrated systems that cover the entire process. At Aldakin we detect a clear

(continued on page 30)

SURVEY | AUTOMATION

(from page 29)

trend toward more flexible, precise and adaptable solutions.

In the next five years there will be greater integration between robotics, advanced CNC control, simulation and real-time measurement, with systems designed to adapt to changing production environments.

Borja García / MB Sistemas

On the one hand, current automation demands the incorporation of technologies based on AI, which, through reading process parameters, make it possible to ensure production quality.

On the other hand, there is demand for automation oriented toward logistics, with automated solutions for repetitive tasks in parts logistics, for example.

Automation is evolving toward the virtual modeling of all processes in a factory, allowing very flexible programming according to changing demands.

In addition, the interpretation of process parameters through AI algorithms stands out in order to correct potential quality issues without human intervention. Humans intervene to verify whether the machine is reasoning correctly and whether what it proposes is true or not.

> Are energy efficiency and sustainability influencing the decision to automate? Where do you perceive the greatest value contribution?

Ignacio Iraolagoitia / Ingemat

Yes, especially under the umbrella of ESG policies, which are permeating the entire value chain.

Automation adds value through advanced quality control and virtual commissioning, the basis for reducing rejects and material consumption.

In addition, energy monitoring and process data analysis allow our clients to improve their operational efficiency and environmental impact.

Sergio Bilbao / Ingenersun

Honestly, we do not clearly perceive this. In projects, no client has energy consumption as a decisive parameter when choosing the supplier of an automation project.

If your installation consumes less, that is welcome, but no one pays for it.

It could add value in processes carried out in sectors linked to sustainability. For example, robotization of panel cleaning in solar farms.

Miguel Ángel Zaratiegui / Aldakin

Energy efficiency and sustainability are increasingly influencing automation decisions. Automated systems make it possible to optimize cycle times, reduce rework and minimize waste.

The greatest value contribution occurs in stable and repeatable processes, where automation directly contributes to more efficient and sustainable production.

Asier Garayar / Gaitek

Whether as a strategic decision or as a consequence of operating better, sustainability is increasingly present in industrial plans, and automation is a direct lever for moving in that direction.

The most immediate link is process control: fewer defects and reprocesses imply less material consumed, less energy invested in useless production and less waste generated.

Precise adjustment of cycles and parameters optimizes energy consumption and machine performance.

Traceability provided by automated systems also facilitates more intelligent stock management, material recovery and faster responses to supply variations.

The greatest value contribution lies in the accumulated effect: a stable and well-controlled process is, by definition, a more sustainable process.

Borja García / MB Sistemas

Since we do not manufacture parts but rather installations to automate manufacturing processes, our developments do not have a direct relationship with sustainability, but they indirectly contribute to it by improving process efficiency and reducing the associated energy consumption.

> What automation technologies are seeing the strongest growth in demand?

Asier Garayar / Gaitek

As an engineering company specialized in automation and robotics, our role is not to arrive with a predefined technology, but to analyze each process and design the most appropriate solution for each client and production context. Technology is the means, not the starting point.

That said, we observe clear trends: strong growth in in-line quality control through advanced robotics integrated with vision and automatic inspection, the automation of loading, unloading and handling operations, and projects that combine automation with digitalization and integrated traceability.

More and more clients not only want to automate an operation, but also to connect it with the rest of the system to gain visibility and responsiveness. The underlying trend is toward more integrated solutions, where robot, vision, control and data form a coherent whole serving the process.

Ignacio Iraolagoitia / Ingemat

More than isolated technologies, what is growing are solutions that integrate robotics, data analysis and AI, applied both to the production process and internal engineering.

At the same time, the need to reduce investments is driving retrofit projects and the reuse of existing installations.

Shortening delivery times is also key in a global market where agility makes the difference.

Sergio Bilbao / Ingenersun

Robotization in general, and computer vision and deep learning, are technologies in demand because of the processes that need to be automated.

As mentioned, processes that do not add value to the product, such as handling or palletizing, which require robotization and the application of computer vision, are the ones most demanded for automation.

Miguel Ángel Zaratiegui / Aldakin

The technologies with the greatest growth are high-precision robotics, advanced CNC systems, prior process simulation and the integration of measurement and compensation.

There is also strong demand for turnkey solutions designed specifically for each application, rather than standard approaches.

Borja García / MB Sistemas

One of the technologies experiencing the greatest growth in current robot-based automated solutions is the incorporation of computer vision systems, which allow machines to recognize, handle and transport parts.

At the same time, ergonomics in workstations is gaining importance in the definition of automated installations. The number of workstations will be reduced, but they will be increasingly less aggressive for workers.

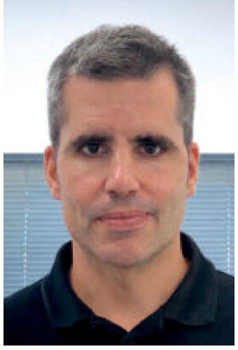
For example, automation will be studied and designed considering the loads that an operator must handle during daily work.

In this sense, there are already examples of humanoids to avoid, for example, an operator having to repeatedly move a heavy part.

MIGUEL ÁNGEL ZARATIEGUI
Business Manager at Aldakin

“IT CURRENTLY COVERS THE ENTIRE PROCESS”

ASIER GARAYAR
Sales Director at Gaitek



“IN-LINE QUALITY CONTROL IS INCREASING”

> What role is AI playing in automation? Is it a natural evolution or a paradigm shift requiring a rethink of industrial engineering?

Ignacio Iraolagoitia / Ingemat

AI is a key tool to gain efficiency, speed and robustness in the design and operation of production lines.

Its real value depends on the knowledge and experience of the professionals who interpret and validate its results.

It does not replace engineering; it enhances it when there is technical judgment and industrial vision behind it.

Sergio Bilbao / Ingenersun

AI is entering the field, but at its own pace because today it also has certain limitations.

It reminds me of when collaborative robots appeared. It seemed that all companies were going to have cobots and that industrial robots would disappear. In the end it was simply a tool that came to occupy a niche with specific needs.

The same will happen with AI: it will be applied where it is needed, not everywhere.

The technology is also less mature than we are often led to believe.

For this reason I would say the evolution will be natural, responding to the real demands of processes. I do not believe it will radically force us to rethink industrial engineering.

Miguel Ángel Zaratiegui / Aldakin

AI is beginning to provide value in areas such as process optimization and data analysis.

At Aldakin we understand AI as a natural evolution of industrial automation, rather than a rupture.

Its impact will be greater when it is integrated on top of robust, precise automation systems well defined from an engineering standpoint.

Asier Garayar / Gaitek

AI in industrial automation is a natural evolution, not a rupture.

It represents the next logical step after digitalization: greater processing capacity, greater precision in decision-making and more possibilities to design solutions adapted to complex and variable environments.

Its integration into advanced vision systems, deviation detection and predictive models is redefining what is possible in terms of process control and stability.

It makes it possible to work with volumes of information previously unmanageable and to detect patterns that conventional systems would not identify in time.

But the real value is not in AI alone, but in how it is integrated with engineering knowledge.

Knowing where and how to apply it remains a matter of technical judgment.

At Gaitek we consider it the most powerful tool available so far, allowing us to design more robust and adaptive solutions for increasingly demanding environments.

BORJA GARCÍA

CEO of MB Sistemas

"COMPUTER VISION TECHNOLOGIES ARE GROWING"

Borja García / MB Sistemas

When implementing AI in a development, it is necessary to be aware of what it provides and what it does not.

Fundamentally, it contributes the ability to handle huge volumes of data and process them, making it possible to learn from them, while also considering the software and hardware required for storage and real-time calculation.

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March, 2026

SURVEY | ARTIFICIAL INTELLIGENCE

NO MORE PROMISES: AI STARTS THE ERA FOR INDUSTRY 4.0

IN THE ABSENCE OF OVERCOMING BARRIERS, EXPERTS FROM TEKNEI, BARBARA, BULLHOST, IDEABLE AND INKKIA SET A 2030 HORIZON FOR THE FULL INDUSTRIAL ADOPTION OF ARTIFICIAL INTELLIGENCE

The use of artificial intelligence in industry is progressing through successive stages. Alberto Rezola (Teknei), David Purón (Barbara), Ibon Madariaga (Bullhost), Iñaki Bartolomé (Ideable) and Gorka Artola (Inkkia) agree that the testing phase has already been overcome and that the sector is now facing the scaling of the technology. However, there is still ground to cover in cybersecurity, data governance and talent in order to achieve maximum efficiency on the factory floor.

The experts estimate three to five years for its full integration, transforming AI from a promise into the engine of Industry 4.0.

> At what stage of maturity is the adoption of AI in industry?

David Purón / Barbara

It depends greatly on the type of use. We would say that in individual day-to-day tasks such as writing emails, generating documentation or even developing software, the increase in the use of generative AI has been massive in virtually every sector, reaching very high adoption rates.

However, in more complex use cases intrinsic to the business—such as process automation through AI agents or the participation of AI in strategic decision-making—there is still ground to cover. The main barriers we observe are related to data privacy and the reliability of the models or of the infrastructure that runs them. I always use the same example: we may feel comfortable if AI writes an email in our place, but would we feel equally comfortable if AI were responsible for shutting down a nuclear reactor?

Alberto Rezola / Teknei

Despite the momentum of Industry 4.0 and 5.0, the maturity of the industrial sector remains intermediate. Considerable progress has been made in automation and, in fact, this has reinforced the need to keep people at the center of the process. As for the application of AI, it is still analytical AI— prediction, optimization or computer vision— that provides tangible value on the factory floor, although in many cases it remains limited to pilots or isolated applications that do not encompass all factories or processes. The current challenge is not to demonstrate the potential, but to scale it: moving from isolated initiatives to industrialized, replicable and sustainable capabilities. We are in a phase of high adoption, but with difficulties in scaling these solutions across multiple sites.

Leading companies and plants in the market are demonstrating that this is possible. 77% of use cases rely on analytical AI and 9% on generative AI, achieving improvements in costs, cycle times or defects (McKinsey).

Iñaki Bartolomé / Ideable

We are moving beyond the "experiment" phase and entering the "day-to-day operational" phase. After years of proofs of concept and pilot projects, which often ended up forgotten in a drawer or were carried out when subsidies were available, the industry has understood that AI is not an end, but a process. Current maturity is measured by the ability to integrate models into the plant's daily workflow. However, we still detect an important gap: the lack of tools that allow these models to survive over time. At Ideable, as a company specialized in AI Native Development, we see the market maturing toward the need for maintainable and scalable systems, where AI ceases to be a "black box" installed by third parties and becomes an internal capability of the company itself.

Ibon Madariaga / Bullhost

Realistically speaking, we are experiencing a kind of end of technological innocence. We have moved beyond the stage of fascination and fireworks and descended into the trenches of operational reality. If two years ago everything consisted of proofs of concept (many of which ended up abandoned in the bottom of a drawer), in 2026 we see a race with participants moving at two different speeds.

On the one hand are the companies that did their homework and are already scaling use cases with an ROI their CFOs can understand. On the other hand there is a large industrial mass that wants to participate in the race without being prepared, struggling with heavy technological debt and poor-quality data. Maturity today is not a matter of having the best algorithm, but of having the house in order. And the challenge is no longer technical, it is purely organizational. Industry knows the technology works, but now faces the challenge of governing it and integrating it.

ALBERTO REZOLA

Business Development Director at Teknei

"THE CHALLENGE IS NOT TO DEMONSTRATE THE POTENTIAL BUT TO SCALE IT"

Gorka Artola / Inkkia

The adoption of AI in industry is progressing at a good pace. Taking Rogers' Innovation Adoption Curve as a reference, and depending on the sector and the competitive profile of the company, we are already at the end of the "Early adopters" phase or well into the "Early majority" phase. Perhaps the most striking aspect of AI is that the adoption process is taking place very quickly compared with other recent innovations, such as cloud technologies or the technologies that formed the concept of Industry 4.0, where the process was perhaps more gradual.

> What is the level of interest of industrial companies in AI and which sectors are betting most decisively on this technology?

Alberto Rezola / Teknei

Interest in artificial intelligence is very high and increasingly oriented toward impact. Companies are moving from "trying AI" to seeking measurable improvements in quality, productivity, energy or service. This shift is supported by new capabilities that reduce risks, time and costs, facilitating their integration into specific use cases.

It has also changed who is driving these initiatives. If previously they were technical or IT profiles, today management teams are leading a more pragmatic approach focused on efficiency. In smart manufacturing, 92% of manufacturers consider that AI will be the main driver of competitiveness in the coming years (Deloitte).

The most advanced sectors are asset-intensive industries such as automotive, aerospace, chemicals, energy, biopharma or mining. Major industrial leaders are already integrating AI into design, operation and maintenance, as demonstrated by initiatives from Siemens, Schneider Electric or Bosch.

David Purón / Barbara

Interest is absolute. All companies have AI on their agenda, in one way or another. The question is not so much which companies are committing most decisively, but which are in the best position to do so.

Highly digitalized sectors such as finance start with an advantage. In contrast, in industries with physical assets such as manufacturing, energy or Oil & Gas, the focus remains on digitizing assets and consolidating data before addressing large-scale AI projects.

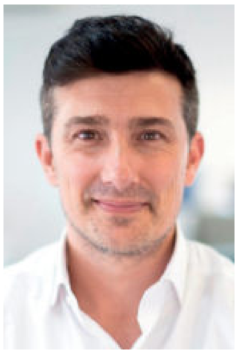
The electricity distribution sector, with its commitment to the virtualization of substations and transformer centers, is a good example. Companies with distributed, critical or maintenance-intensive assets are investing decisively because they perceive a direct impact on operational efficiency, cost reduction and improved resilience. The challenge is how to support them with the right technology so they can do so with guarantees.

Ibon Madariaga / Bullhost

We have moved from carefree interest in understanding what AI can do for our business to a pure survival instinct. It is no longer curiosity, it is fear of competitive irrelevance if we fall behind in the race. But beware: it is an interest with its feet on the ground. The time of doing AI for the sake of doing AI is over; now the robustness of the data and, above all, cybersecurity are prioritized over spectacular demonstrations.

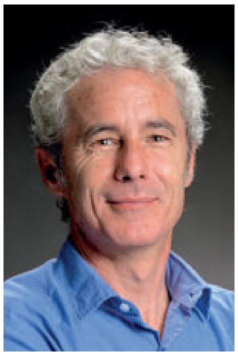
As for the protagonists, the automotive sector plays in another league, since its historical robotization gave it a natural advantage in adopting computer vision and predictive models earlier than anyone else. It is closely followed by the energy sector, obsessed with optimizing critical assets, and a pharmaceutical industry that is being very aggressive in R&D and quality control.

DAVID PURÓN
CEO of Barbara



"ALL COMPANIES HAVE AI ON THEIR AGENDA"

IBON MADARIAGA
Telecommunications Engineer at Bullhost



"DATA ROBUSTNESS AND SECURITY ARE PRIORITIZED"

General manufacturing is one step behind, but quietly accelerating to reduce costs in a global market that forgives no one.

Iñaki Bartolomé / Ideable

Interest is at its highest level and, above all, much more focused than two years ago. Companies are no longer trying to "have AI", but to solve specific profitability and quality problems where AI helps achieve the objective. In our environment, the steel and automotive sectors in the Basque Country are leading this commitment. Companies with continuous processes and high quality standards are being the most courageous. From our position, we observe that companies investing decisively are those that have understood that AI is the only way to offset energy and raw material costs through extreme process optimization, productivity improvements and the drastic reduction of waste or defects.

Gorka Artola / Inkkia

The common denominator among sectors, and particularly companies, that are betting most decisively on AI is that they use innovation and technology as elements of differentiation and competitiveness. These companies are adapting their business processes to the digital world and already resemble technology companies operating in conventional sectors rather than companies that remain anchored in more traditional business models.

> In which applications or use cases is the greatest demand for AI solutions in industry concentrated?

Iñaki Bartolomé / Ideable

Current demand is mainly focused on automated visual inspection for quality control and process optimization through predictive analytics. Particularly in sectors such as steel, real-time defect detection is critical.

We are also seeing growing interest in implementing LLMs (Large Language Models) to improve internal processes and knowledge management in large corporations through RAGs.

However, the greatest impact can be achieved by adapting quality control through AI-based computer vision, something we are working on intensively with our platform VisualMLOps.ai, enabling computer vision to evolve at the same pace as production lines.

Alberto Rezola / Teknei

Demand for AI in industry has become more pragmatic: from "we want to try AI" to "we need impact and ROI." For this reason, organizations prioritize cases where the return is direct and operational. The main areas are six: Quality: visual inspection to detect defects, improve traceability and reduce rejects; Maintenance: predictive and prescriptive maintenance, estimation of useful life and support for technicians; Process and energy optimization: adjustment of setpoints, reduction of consumption and waste, and improvement of OEE; Planning and supply chain: better sequencing, inventories, demand forecasting and end-to-end visibility; Safety and reliability: early detection of incidents, compliance and risk monitoring; GenAI and industrial copilots: search and synthesis of technical documentation, assistance in diagnosis and generation or validation of instructions and code.

David Purón / Barbara

In all sectors we observe strong penetration of use cases related to Computer Vision, especially in areas such as safety in industrial plants or quality control through image analysis.

Predictive analytics also stands out, although its orientation varies by sector. For example, in electricity distribution demand is concentrated in use cases based on demand forecasting or the detection of anomalies in operations (energy losses in the grid due to failures or fraud in consumption). In companies with production processes, demand focuses on predictive maintenance and energy efficiency.

These are cases with a clear and measurable return. However, the first step many organizations know they must take is not deploying AI but properly structuring operational data coming from PLCs, SCADA and other OT systems.

Ibon Madariaga / Bullhost

Although Generative AI takes all the media headlines, on the factory floor the king is still predictive maintenance. Anticipating when a critical machine will fail offers an immediate and tangible return on investment: any measure aimed at preventing a production stoppage is music to the ears of any executive committee.

Secondly, computer vision has become ubiquitous for quality control, detecting micro-defects at the speed of a production line and significantly improving product quality evaluation processes.

But the real emerging star this year is industrial copilots. We are seeing assistants that allow operators to chat with technical documentation to solve breakdowns in real time, which constitutes an extremely valuable tool to close the technical knowledge gap that concerns us so much.

(continued on page 34)

SURVEY | ARTIFICIAL INTELLIGENCE

(from page 33)

The use of artificial intelligence in other environments, such as production planning or energy optimization, has also become widespread.

Gorka Artola / Inkkia

There are two major areas where demand is concentrating. On the one hand, we have personal productivity solutions, understood as AI copilots that help people become more efficient in their work. They are the easiest and most widespread way of incorporating AI, although they have less capacity to improve the business itself.

On the other hand, there are Autonomous AI Systems, solutions that assume full responsibility for executing tasks without human supervision. Autonomous AI systems, less common but growing, offer the results with the greatest business impact, even making viable approaches that until recently were considered impossible and that can revolutionize entire sectors.

> What factors are limiting the scaling and industrialization of AI projects in companies?

Alberto Rezola / Teknei

The main barriers to scaling AI are not usually in the models themselves but in the complexity of the factory as a system. At Teknei we identify five key constraints:

OT/IT integration: convergence between both environments remains critical due to its impact on security and operational continuity. Incomplete historical data, heterogeneous sensors and a lack of standards between plants are added to the challenge.

From pilot to product: many cases are developed and maintained in isolation, without DataOps, MLOps or LLMOps processes that ensure monitoring, retraining, traceability or drift management.

Cybersecurity and availability: when intervening in operations, requirements for robustness and secure architecture increase.

Talent and change: the gap in hybrid profiles (process + data + AI) and in operational roles prepared to adopt AI persists.

Lack of global business cases: the absence of prioritization leads to the accumulation of pilots without reaching plant-level or multi-plant implementations.

David Purón / Barbara

More than the technology itself, the main barrier is the complexity of the industrial environment. These are environments where historically there has been no connectivity or remote access to assets. The lack of structured data, integration with OT systems, cybersecurity, remote device management and continuous model maintenance are common barriers.

Many companies achieve successful pilots in the laboratory, but scaling requires infrastructure in the plant that allows models to be deployed and monitored securely and centrally.

In addition, the shortage of hybrid IT/OT profiles and the need to first advance basic digitalization of assets have traditionally delayed industrialization. Fortunately, the situation is changing rapidly.

Ibon Madariaga / Bullhost

From our point of view there are three points of tension we must overcome.

The first is data governance: in industry, data lives in isolated silos (IT vs OT) and is often dirty or unstructured, making it impossible to train reliable models.

The second, which we see every day at Bullhost, is cybersecurity vertigo. Connecting critical infrastructures to the cloud to process AI expands the attack surface, and a legitimate and real fear arises that a vulnerable algorithm could affect production.

Finally, the human factor: we lack translators. There is an acute shortage of hybrid profiles who understand code and at the same time know how a production plant operates. Without that talent that unites both worlds, the implementation of AI in the factory becomes unviable.

IÑAKI BARTOLOMÉ
CEO of Ideable

"DEMAND IS FOCUSED ON PREDICTIVE ANALYTICS"

Iñaki Bartolomé / Ideable

The main barrier in our field is "Data Drift" or model degradation. In the laboratory AI works, but in the reality of the plant conditions change (lighting, machinery wear, new materials) and the model loses accuracy.

Traditionally, retraining these models required external data scientists and a strong IT team, making the system economically unsustainable.

That is why we created VisualMLOps.ai: to eliminate the technical and infrastructure bottleneck. Our platform allows plant operators themselves to lead AI retraining without knowing how to program and without dealing with the complexity of MLOps.

Gorka Artola / Inkkia

The main factors slowing the incorporation of AI in industry are inherently human and are related to change management, particularly the management of the risk inherent in an innovation of the magnitude of generative AI.

We are facing a technology with enormous capabilities and potential. The associated risks are proportional and companies, even those that have already embraced AI more intensely, are beginning to become aware of this.

The response to this situation is initially to stop and reflect, then incorporate an AI Governance System that allows uncertainty to be managed and, once the risk is mitigated, accelerate the incorporation of AI in the areas of the business where it makes sense.

> How does European AI regulation influence projects?

David Purón / Barbara

European regulation has a particularly relevant impact in sectors considered critical. It requires incorporating aspects such as traceability, risk management and data governance from the design stage.

In companies that are still in early phases of digitalization, this adds an additional layer of complexity. However, it also promotes the development of more robust architectures, with greater local control and less dependence on external infrastructures, something especially relevant in industrial environments.

Alberto Rezola / Teknei

Although European regulation impacts all AI systems, in the industrial environment its effect is selective. For internal uses— optimization, prediction or quality— the impact is moderate.

However, in high-risk areas such as safety, personnel management or regulated components, requirements increase: risk management, data quality, logging, documentation, human supervision and cybersecurity.

This adds to the existing challenge of lacking AI management and monitoring processes.

Rather than a brake, we see regulation as an opportunity to promote solid processes that allow "industrializing AI" while complying with the regulatory framework.

The timing is key: although it has been progressing in phases since 2024, its real application will begin from 2026. This is already leading many companies to create robust AI governance frameworks—inventory, risk classification and controls—necessary to scale.

Iñaki Bartolomé / Ideable

The European Union's AI Act is a catalyst for quality. Far from being an obstacle, it forces us to work with standards of transparency and security that are essential in critical industrial environments. In high-risk or operational-impact projects, data traceability and model explainability are legal requirements that we had already been applying out of technical conviction.

Our native AI development methodology ensures that every step of the software lifecycle complies with these criteria.

European regulation gives companies the confidence that they are investing in ethical, secure solutions protected against future regulatory changes, something vital for long-term investments.

Ibon Madariaga / Bullhost

Its influence acts as a mandatory quality filter. With the entry into force of the new obligations of the EU AI Act in the third quarter of 2026, "homemade" solutions will no longer be sufficient.

For industry, many systems such as machinery safety systems are now considered high-risk, which requires absolute traceability and transparency.

We are not talking about regulation becoming a collection of prohibitions and restrictions, but rather that it will force the professionalization of AI deployment, particularly for its integration with compliance and risk management, requiring greater coordination between IT, OT, legal and operations.

At first it will represent a bureaucratic overload that will slow deployments, but in the medium term it is the only way to build something sustainable.

This regulation will consolidate only those solutions that are auditable and secure, removing inconsistent deployments and "vaporware" from the market.

Gorka Artola / Inkkia

The AI Act, together with the management of other aspects such as ensuring confidentiality and cybersecurity in AI, forms the basis and the best response to the risk management mentioned in the previous question.

More than a regulatory limitation, it is a powerful framework that helps take into account all the necessary elements to implement AI Governance Systems that are proportional and appropriate for each company in a rapid manner.

That said, it is true that, as with many regulations, facing the AI Act for the first time and alone can be overwhelming and sometimes even blocking.

> When do you believe AI will reach truly mature adoption in industry?

Alberto Rezola / Teknei

The answer depends on what we understand by "maturity".

If we define it as having a prioritized portfolio of use cases, an industrial data platform, DataOps / MLOps / LLMOps processes, integrated security and multi-plant deployments, today only leading companies show a solid level, particularly in "classic" cases such as computer vision, predictive maintenance or optimization.

However, the general maturity of the sector, beyond these advanced plants, will probably arrive in 2 to 4 years, when platforms and replicable operating models consolidate.

For this to happen, it is essential that companies define their roadmap toward 2030 as soon as possible: what objectives they pursue, what capabilities they must develop and what projects they must execute.

AI does not arrive by inertia; it requires technical and functional preparation, and each company's ability to adopt it will determine its future competitiveness.

David Purón / Barbara

Adoption will become truly mature when AI is naturally integrated into operational processes and ceases to be managed as a collection of isolated projects.

In the most advanced sectors this consolidation could occur in the next three to five years.

However, globally the process will be more gradual, since many companies still have to complete their basic digital transition.

The combination of solid industrial digitalization and Edge infrastructure in plants—which improves privacy, latency and the reliability of data and models—will be the determining factor in enabling the leap toward mass adoption.

Ibon Madariaga / Bullhost

True maturity will arrive the day we stop using the acronym AI. A technology is mature when it becomes invisible.

By 2028–2030 we will simply speak of engineering or process management, because AI will be another intrinsic component, as mundane and indispensable as electricity or an IP connection today. It will have become a commodity.

Right now we are leaving the curve of inflated expectations and entering a phase of real productivity.

The arrival of more powerful and affordable computing will be the final catalyst: when intelligence resides in the sensor or machine itself without depending on cloud latency, the industry will have completed its transformation.

Iñaki Bartolomé / Ideable

Real maturity will arrive within a horizon of 3 to 5 years, when we stop talking about "AI projects" and instead simply talk about industrial software.

We will reach that point when MLOps becomes a standard layer in factories, at the same level as the cloud or an ERP, enabling autonomous management of learning cycles.

At Ideable we are working to bring that future forward, promoting development in which AI is designed natively from the conceptual stage.

Maturity will come hand in hand with customer autonomy: when a company is capable of managing, retraining and deploying its own models easily, AI will have ceased to be a promise and will become the definitive engine of Industry 4.0.

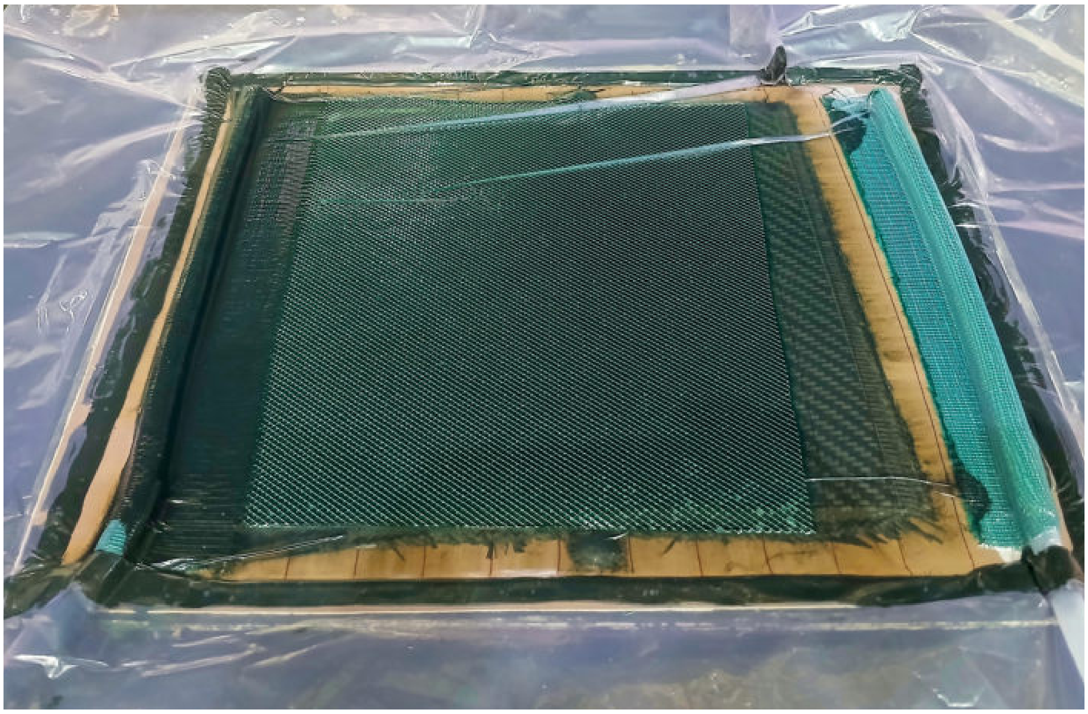
Gorka Artola / Inkkia

AI adoption will have reached maturity in industry when most companies have a fully operational AI Governance System.

From that moment on, most business decisions will be based on the impact of AI on the business, and the adoption of each innovation will accelerate or not depending on its return on investment.

GORKA ARTOLA
CEO of Inkkia

"THE AI ACT IS THE RESPONSE TO RISK MANAGEMENT"



GAIKER

Gaiker is strengthening its specialization in the development of functionalized materials.

TECHNOLOGY | AERONAUTICS

GAIKER BETS ON AI IN AEROSTRUCTURE DESIGN

IT IS PARTICIPATING IN THE DEVELOPMENT OF A VIRTUAL TESTING PLATFORM WITHIN THE FRAMEWORK OF THE EUROPEAN PAIRAMID PROJECT

The technology center Gaiker will help transform the design, manufacturing and certification processes of composite aeronautical aerostructures through artificial intelligence as one of the participating entities in the European pAIramid project. The research proposes replacing traditional physical testing with advanced data-based simulations, with the aim of reducing costs, time and complexity in the aeronautical industry.

One of the main challenges in the sector is the certification process for composite aerostructures. This procedure, which is essential to guarantee the safety and reliability of components, is based on a traditional pyramidal approach in which each level, from material specimens to complete structures, is subjected to sequential physical testing. It is a complex, costly and slow process that limits innovation capacity and lengthens development cycles.

To address these limitations, pAIramid proposes the creation of a virtual testing platform to guide design and processing at all levels of the characterization pyramid, from the material specimen, the element, the component and the complete structure, optimizing virtual certification, accelerating innovation and improving decision-making in design. At the same time, functionalized thermoset and thermoplastic resins will be developed, and the LRI (Liquid Resin Infusion) and FDM (Fused Deposition Modelling) manufacturing processes will be optimized to produce complex functionalized parts in a cost-effective and scalable way.

Through this innovative approach, the aim is to replace costly physical tests with high-fidelity simulations and data-based knowledge, turning certification into a more agile, efficient and connected process.

PHYSICAL TESTING GIVES WAY TO SIMULATIONS

COSTS, TIME AND COMPLEXITY WILL BE REDUCED

New materials

Gaiker is focusing its contribution to the project on the development of functionalized thermoset resins, which are the basis for obtaining advanced composites through the Liquid Resin Infusion (LRI) process. It is also providing support in the optimization of the Liquid Resin Infusion (LRI) process, adapting it to the new materials developed in the project, while also defining the methodology for calculating the environmental impact and circularity of all the materials, processes and products that will be integrated into the pAIramid platform. Its work culminates in the practical validation of the methodologies developed with real industrial use cases, in particular: an aircraft door structure and the leading edge of an aircraft wing.

Gaiker's participation in the European pAIramid project represents a decisive step in the consolidation of its technological capabilities and its alignment with the future demands of the aeronautical industry. In this context, the center is strengthening its specialization in the development of functionalized materials, especially in the formulation of bio-based thermoset resins, whose experimental validation opens the door to lighter and more sustainable alternatives to conventional protection methods, such as lightning strike protection systems. Likewise, its involvement in the development of the iTOOL digital platform, in collaboration with the other consortium partners, makes it possible to integrate its knowledge of materials with advanced artificial intelligence tools, fostering a methodology in which virtual simulation and physical characterization feed back into one another in order to optimize development cycles. This work is completed with validation in real demonstrators, such as the aircraft door or the leading edge, facilitating the transfer of results from pilot environments to specific industrial applications in the aeronautical sector.

The pAIramid consortium brings together key players from across the entire aerospace value chain. These include the technology center Ikerlan as project coordinator, the entity IRT Jules Verne, Inegi, the Universitat de Girona and Brunel University London, in addition to companies in the aeronautical sector such as Collins Aerospace, Turkish Aerospace, Potez Aéronautique and Sofitec Aero, and consulting and technology services firms such as Meca, LKS Next and Zabala Innovation Europe.

TECHNOLOGY | ARTIFICIAL INTELLIGENCE

IKERLAN SHIELDS TECHNOLOGICAL SOVEREIGNTY

TOGETHER WITH LANTEK, IT IS DEVELOPING A NEW AGENTIC AI ARCHITECTURE TO REDUCE EXTERNAL DEPENDENCE AND GUARANTEE CONTROL OVER DATA

Ikerlan is driving, together with the multinational Lantek, the development of a new agentic artificial intelligence architecture within the Galaxia project. The goal is to strengthen the technological sovereignty of Basque industry through the development of its own capabilities in advanced artificial intelligence, reducing dependence on external technological platforms and guaranteeing control over data and critical processes.

The project, financed by the Basque Government's Hazitek program, represents a leap forward in the evolution of artificial intelligence applied to production environments. Compared with traditional conversational systems, the proposal is based on a multi-agent architecture capable not only of analyzing information, but also of executing actions in a coordinated way within real industrial processes.

The platform's modular design offers the possibility of applying the logic of coordinated agents to multiple industrial sectors, which facilitates its scalability and technology transfer. Its function is to take charge of automatable and analytical tasks so that professionals can focus on supervision, decision-making and continuous improvement, which represents a qualitative leap in functionality compared with the solutions previously used in industry. Lantek, specialized in the development of software for the metal and sheet metal industry, acts as coordinator of the project. Ikerlan, for its part, assumes the role of technological leader on the basis of its broad multi-technology capabilities and experience in the development of intelligent systems and applied research in industry.

The project also includes the participation of Eroski, Mondragon Assembly, Goizper, Xabet, Ubikare, Lis Data, Fagor Arrasate and Dorlet, which validate the technology in applications across different sectors.

Lantek coordinates the Galaxia project, with Ikerlan as technological leader.

LANTEK

Empresa XXI
March, 2026

TECHNOLOGY | ROBOTICS

IDEKO TRANSFORMS AERONAUTICAL MANUFACTURING

TOGETHER WITH THE DANOBAT COOPERATIVE, IT IS DEVELOPING A NEW GENERATION OF FLEXIBLE, SENSOR-EQUIPPED AND CONNECTED ROBOTIC CELLS IN THE ROBOCOMP PROJECT

The aeronautical industry faces a twofold strategic challenge: moving toward emissions neutrality by 2050 while at the same time improving its competitiveness by reducing production costs. These challenges are closely linked to the need to transform manufacturing processes that are still heavily dependent on heavy, costly machinery with very limited flexibility in production processes.

To address these limitations, the technology center Ideko has participated in the development of a new generation of flexible, sensor-equipped and connected robotic cells capable of replacing traditional machining systems. It has done so within the framework of the Robocomp project, led by the Danobat cooperative with the aim of transforming the manufacturing processes of aeronautical components through more efficient and adaptable solutions.

A PARADIGM SHIFT IN THE WAY PARTS ARE MACHINED

The new robotic cells are designed to automate critical operations in carbon fiber parts, such as milling, drilling and trimming, reducing energy consumption and increasing the overall efficiency of the process.

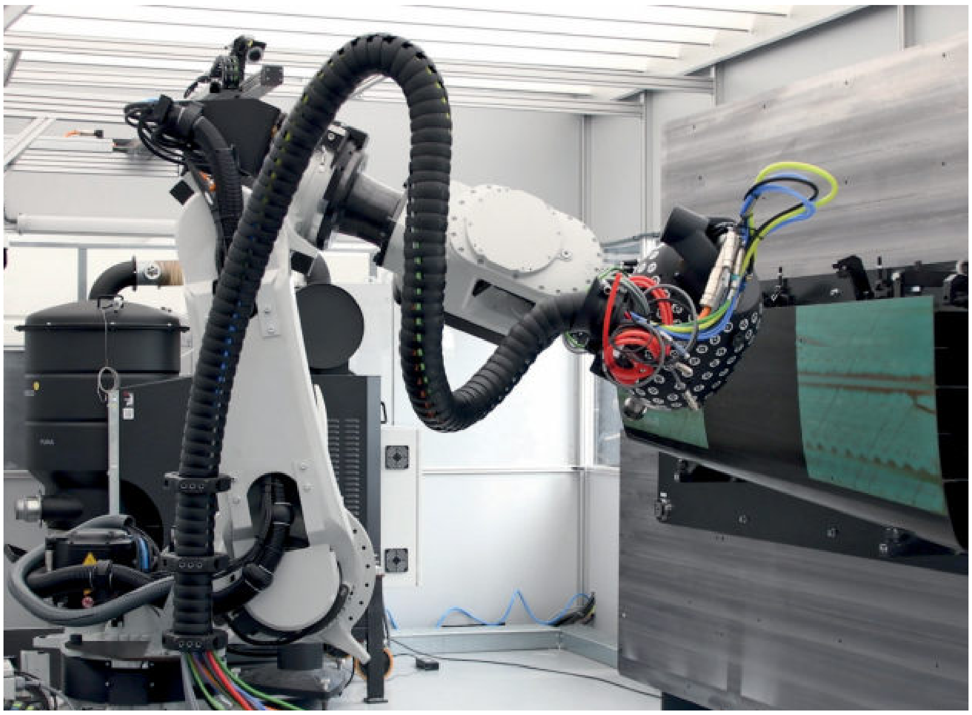
One of the project's distinctive advances is the paradigm shift in the way parts are machined. Compared with traditional systems, which operate mainly horizontally and are limited when dealing with complex geometries, the developed solution makes it possible to work with the parts in a vertical position. This capability improves access to components that are difficult to handle and provides greater flexibility to production plants, while also facilitating the scalability of production and its adaptation to new industrial needs.

Ideko's contribution has been key in providing these robotic cells with precision and intelligence. On the one hand, the center has worked on improving mechatronics and on developing advanced calibration techniques, with the aim of increasing the precision of the robots until they meet the demanding standards of the aerospace sector.

On the other hand, it has promoted the digitalization of the systems through the integration of sensors and computer vision technologies. Thanks to this, the robots are able to analyze the state of the process in real time, monitoring production and immediately detecting possible deviations or errors. This continuous supervision capability makes it possible to ensure the quality of the parts and optimize decision-making during production.

The project also incorporates a clear dimension of sustainability, with the development of technologies aimed at optimizing the machining of composite materials and ensuring a more efficient use of energy and resources, in line with the sector's decarbonization goals.

Robocomp is supported by an industrial consortium covering the entire value chain. Alongside Danobat's leadership and Ideko's scientific expertise, the project involves Airbus, which contributes the vision and requirements of the end user; Robotnik, specialized in mobile robotics; and Industrial Olmar, dedicated to the manufacture of autoclaves and pressure equipment.



Ideko has increased the precision of the robots.

IDEKO

THE PROJECT OFFERS NEW POSSIBILITIES FOR SMES

The collaboration among these stakeholders has made it possible to advance the development of technologies that place the Basque and Spanish industrial fabric at the forefront of advanced manufacturing. In addition, the solutions developed the project show strong potential for transfer to other machining-intensive sectors, such as automotive, energy or capital goods.

This cross-sector character opens up new opportunities for small and medium-sized companies, both in the adoption of advanced technologies and in the development of new services linked to intelligent maintenance and industrial digitalization, thereby strengthening the competitiveness of the productive fabric as a whole.


TEKNIKER

Tekniker provides flexible automation.

TECHNOLOGY | ARTIFICIAL INTELLIGENCE

TEKNIKER ADAPTS THE FACTORY OF THE FUTURE

IT CREATES ROBOTIC AND DIGITAL SOLUTIONS TO SOLVE THE LOADING AND UNLOADING OF COMPLEX PARTS, DRIVING A PRODUCTION MODEL CAPABLE OF ADAPTING TO MASS CUSTOMIZATION

The trend toward the mass customization of products is forcing the manufacturing industry to increasingly adapt its production processes to the customer without giving up efficiency. However, the high variability of references clashes head-on with traditional automation strategies, designed for rigid production and large volumes.

With the aim of finding an alternative model that provides factories with a high capacity for adaptation and resilience, the technology center Tekniker, a member of the Basque Research and Technology Alliance (BRTA), is leading the ADAPTA research project. This initiative, financed by the TransMisiones program of Spain's Ministry of Science, Innovation and Universities, seeks to implement flexible production systems through Artificial Intelligence (AI) and collaborative robotics.

Within this framework, the center coordinates the scientific development and globally drives a critical and representative use case: the automation of product loading and unloading in industrial painting lines.

At present, this process is predominantly manual, intensive and repetitive. Technicians have to hang and unhang parts on racks that feed the line, while dealing with continuous model changes and the inevitable deformations that the racks themselves suffer through use. To overcome this challenge, Tekniker has developed a prototype-level automated robotic cell that brings the flexibility of AI directly onto the factory floor.

THE ADAPTA PROJECT OFFERS AN ALTERNATIVE MODEL

The solution integrates AI-based flexible handling modules of the bin-picking type, which allow the robot to pick up randomly arranged parts and incorporate new objects with minimal configuration. For the hanging, insertion and unhooking phase, the system relies on 3D computer vision, capable of adjusting the robot's trajectory in real time in order to work around rack deformations and maintain operational robustness.

"The added value compared with traditional commercial alternatives is that it is not limited to automating a fixed reference, but rather presents a modular architecture designed expressly for environments with high variability," explains Ander Iriondo, researcher at Tekniker.

Code-less programming

To facilitate its adoption in industry, the system incorporates a code-less programming environment that reduces setup times, and relies on virtualization technologies and digital twins to carry out prior planning and validation, thereby accelerating the engineering cycle.

In addition, the robotic cell is connected to the plant's management systems (ERP/MES), which guarantees total traceability of parts and operations. The project also proposes a data-space infrastructure aligned with the European GAIA-X and IDSA standards. This enables secure, reliable and sovereign information sharing across the entire value chain.

With the innovations that have been developed, already operating in a prototype representative of the real scenario, Tekniker hopes to provide industry with truly flexible automation, improving technicians' ergonomics, stabilizing production rates and guaranteeing quality.

TECNALIA PROMOTES RECYCLING TOGETHER WITH RECSO

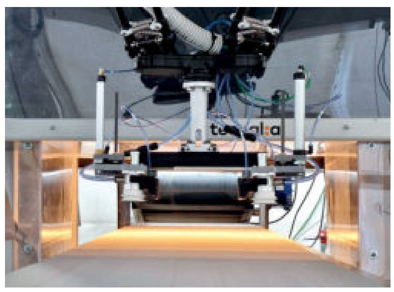
The research center Tecnalia and the Valladolid-based company Reciclados Sostenibles (RECSO) are testing a robot prototype based on artificial intelligence and hyperspectral technologies to improve the management and recovery of construction and demolition waste (CDW). The initiative is part of the European Reconmatic project, whose objective is to transform the management of this waste through automated solutions and circular economy models.

The system developed by Tecnalia has been moved to Recso's facilities for validation under real operating conditions. The robot incorporates hyperspectral sensors in the NIR range and artificial intelligence algorithms capable of identifying and characterizing the different materials present in the waste stream with greater precision than human vision.

THE ROBOT INCORPORATES SENSORS AND AI ALGORITHMS

Based on that identification, the system sends instructions to an articulated arm to automatically separate the selected materials. This more precise sorting makes it possible to optimize waste treatment and recover higher-quality aggregates that can be used as substitutes for natural materials in new construction works, thereby reducing pressure on resources and the environmental footprint of the sector.

Construction is responsible for around 36% of the waste generated in the European Union, mainly that produced during the construction and demolition phases, which has driven the development of technological solutions capable of improving recycling rates.


TECNALIA

Tecnalia's AI-based robot.

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