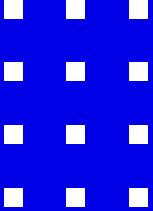


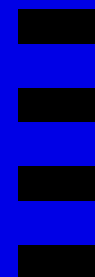


'21 ANNUAL REPORT



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01. Institutional message



XABIER ALZAGA
President of IDEKO

Despite the uncertainty after two years of pandemic, the performance of the centre over the past year has been positive.

This has only been possible thanks to the enormous effort of all the people who form part of the centre, who through their resilience have managed to adapt to the needs of each moment, delivering a relevant response to each new challenge and providing value to customers through innovative and differentiating technological solutions that help them recover from the crisis. Congratulations on your work and thank you.

On the other hand, partnerships and collaborations have continued to be of strategic interest to IDEKO. This year we have joined the Spanish Federation of Technology Centres, Fedit. This new partnership will allow us to further strengthen our position as a national benchmark centre in the development of advanced manufacturing technologies. Further to the above, we have reached a cooperation agreement to boost artificial intelligence in industrial manufacturing. In this sense, and with the aim of accelerating the digitisation of production environments, we have partnered with the Centre for Advanced Aeronautical Manufacturing (CFAA) of the Basque University UPV/EHU, the IMH Campus Advanced Training Centre and the BCAM Basque Centre for Applied Mathematics to create the AIMS -Artificial Intelligence Manufacturing for Sustainability - Classroom. This space is a collaborative environment that seeks to drive the application of AI solutions in industry, one of our main challenges for the coming years.

Back again is our presence at events this year. As such, last June we participated once again in the Machine Tool Biennial, 31BIEMH, with a presentation of our latest advances in advanced manufacturing. In addition to this milestone, next August we will play an important role as one of the main organisers of CIRP, the most important Advanced Manufacturing forum at international level, which will be held from the 21st to the 27th at the BEC in Bilbao (Bizkaia). The organisation of this Assembly, which will be attended by more than 500 leading international researchers in the field of precision engineering, will allow us to strengthen our position in research and innovation applied to industrial manufacturing and to deepen our scientific knowledge and specialisation in manufacturing.



NEREA ARANGUREN
Managing Director of IDEKO

Once again, it is my pleasure to share with everybody the most important information relating to the activity carried out by IDEKO over the past year.

Despite a difficult year marked by the health crisis caused by COVID-19, business-wise we managed to maintain an upward trend and our turnover stood at almost 10 million euros, 46% from contracts with companies, which reinforces our model of technology transfer to the industrial fabric and the stability and confidence of our client portfolio. To be more precise, IDEKO closed 2021 with revenues reaching 9.8 million euros, a figure that continues the upward trend from previous years, surpassing the 9.6 million euros invoiced in 2020.

All the above activity without losing sight of scientific production and while continuing our information dissemination, with 33 indexed publications in total, of which nine were Q1, a ranking that indicates the excellence of the publications. Besides that, we reached the figure of 40 active patents, 7 of which were granted during the financial year. In 2021, our commitment to people and talent has remained one of our main axes. As regards human capital, the IDEKO staff is made up of a total of 127, of which 29% are doctors, a figure to which 8 more will be added in the near future, all of whom are currently completing their doctoral thesis at the centre.

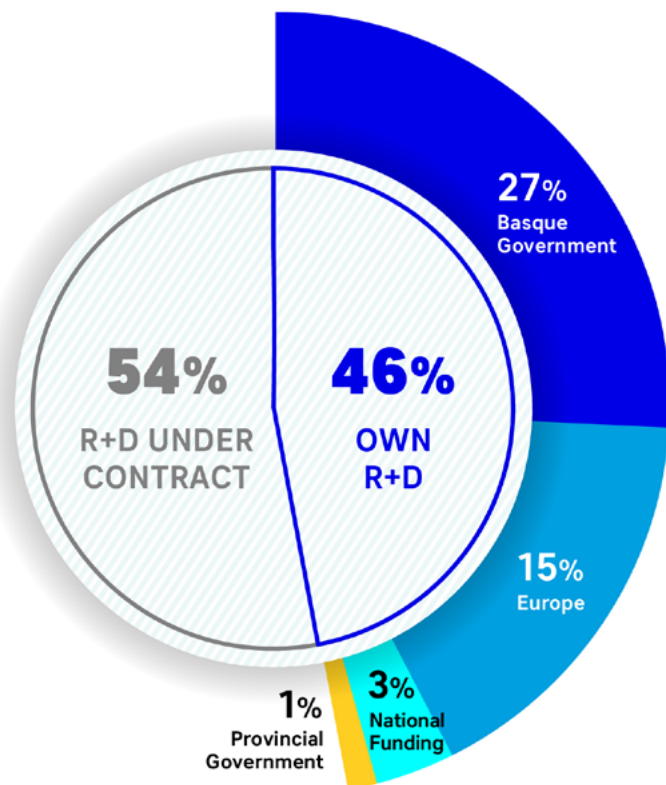
The 2021 results also show the support we have received for our strong commitment to technological specialisation. Recently, in the framework of our new strategic plan for the coming years, we have charted the new roadmap for which we must give our full 100% to be able to anticipate the transformations in manufacturing and respond to the needs of the industry. Specifically, we have focused on seven challenges for the next four years: artificial intelligence applied to manufacturing, precision machines and processes, simulation and digital twins, active and smart components, processes for parts and strategic sectors, robotics and additive manufacturing. Across the board, all these challenges bear in mind the perspective of environmental sustainability and the principles of the circular economy. In short, we will maintain our commitment to specialisation, always from a sustainable point of view, not only to grow economically, but also to generate well-being and a better planet for the years to come.

10M€ Total incomes



46% Own R+D

54% R+D Under Contract



116 People

30% PhD



34  Patents

>150
Technology
Transfer Projects

>30
years coordinating
European Projects

1 ABOUT US

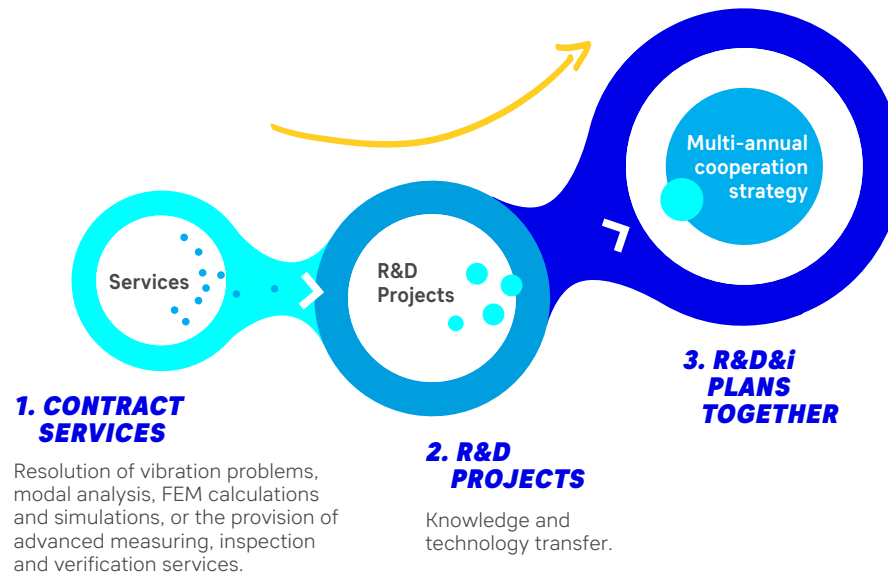
We are a research centre that specialises in industrial production and manufacturing technologies and we are integrated into the BRTA (Basque Research and Technology Alliance). Our activity covers the identification and analysis of opportunities, the design and development of products, business lines and production processes and the resolution of problems through the provision of technological services such as technical consultancy and equipment based services.

2 ORGANISATION



3 COLLABORATION OF IDEKO WITH COMPANIES

TECHNOLOGICAL PARTNER
we offer an **integral solution** for the needs of today and the future in advanced manufacturing.



4
SPECIALIZATION

ICT AND AUTOMATION

- Cloud Computing.
- Advanced Programming.
- Artificial Intelligence.
- Value-added industrial automation:
 - Predictive and proactive maintenance.

01



DYNAMICS AND CONTROL

- Dynamic behaviour of machines:
 - Self-excited vibrations.
 - Damping.
 - Advanced control algorithms.
 - Mechatronics simulation.
- Advanced robotics.

02



DESIGN AND PRECISION ENGINEERING

- Non-contact dimensional measurement.
- Machine vision.
- Advanced concepts of machines and components:
 - Mechanical and thermal simulations.
 - Ecodesign.

03



MANUFACTURING PROCESSES

- Development of cutting and abrasion machining technologies.
- Sustainable manufacturing.
- Industrial management and production.
- Composite technologies.
- Laser technologies: Cutting processes and additive manufacturing.
- NDT Inspection of superficial and internal defectology.

04



5
TECHNOLOGICAL
SOLUTION AND
SERVICES

VERIFICATION
and machine fault
DIAGNOSIS

Dimensional
measurement
ULTRA-PRECISION

MEASUREMENT
by VISION
Photogrammetry

01

03

05

02

04

06

MEASUREMENT
of RESIDUAL
STRESSES
X-Ray Diffractometry

NDT TESTING
Ultrasonic,
Eddy currents,
Thermography

Development and integration of
TESTING and
MEASURING SYSTEMS
on machines and production lines

04. Projects

6 R&D PROJECTS

Digital fingerprint for indexing attachment and rotary tables.

Development of the conditions and tools for the grinding of brake discs coated with hard particles.

Coil fed ultrafast laser cutting machines.

Study of new artificial intelligence techniques based on deep learning aimed at the optimisation of industrial processes.

Optimisation of processes for zero-defect manufacture of large parts.

Precision engineering for the improvement of manufacturing means.

Smart and streamlined BRTA ecosystem for accelerating the implementation of the new robotics generation in the Basque factories of the future.

Development of a damped and fretting-resistant quill.

Development of tools for the industrial user for the integration, training and continuous maintenance of AI models.

New ultra-precision lathes for the machining of complex parts.

Development of a new generation of grin (green and intelligent) broaching machines for the automotive sector.

Quality control digital platform for zero-defect manufacture by means of artificial intelligence.

Special tools for composite machining.

Flexible and reconfigurable manufacturing systems based on collaborative robots.

New value propositions for the wheelset of the future based on digitalisation and AI of sustainable, resilient and people-centred manufacturing in the railway sector.

High-performance advanced robotic solution based on wear predictive models for finishing processes.

EUROPEAN PROJECTS

AVISPA

Vision techniques and artificial intelligence applied to nondestructive inspection.

COGNIPLANT

Development of digital technologies for equipment diagnostics and process monitoring in the continuous production industry.

DAT4.ZERO

Digitally improved quality management system, that compiles and organises data of a distributed multiple sensor network.

INTERQ

Digital technologies for the integrated treatment of quality in zero-defect manufacturing.

LEVEL-UP

Reconditioning and digitalisation of production lines for prolonging their useful life and adapting them to the current connected and digital equipment trends.

SERRANO

Applications for more secure, faster and cognitive cloud computing.

SMAAL

Photogrammetry for measuring and assembly of large aerostructures.

TEAMING-AI

Human-AI platforms for Artificial Intelligence evolution in manufacturing.

TWINGOALS

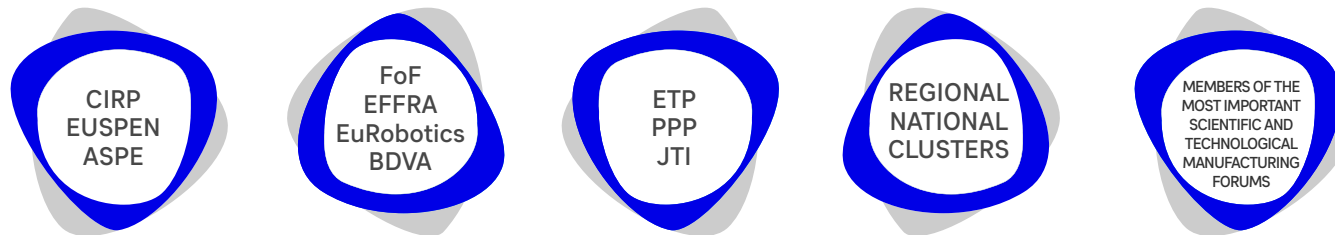
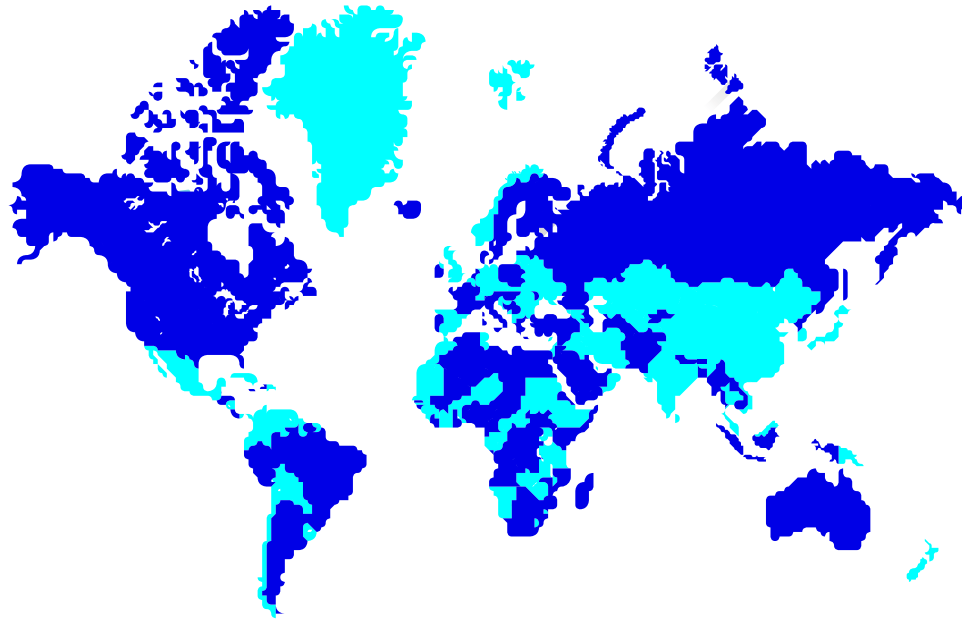
Digital Twins towards Zero-Defect Manufacturing (ZDM) and the circular economy.

QU4LITY

Digital platforms for zero-defect manufacturing and error correction at machine and process levels, preventing undesirable reprocessing.

05. Alliances and collaborations

8 ALLIANCES AND COLLABORATIONS



BUCAREST UNIV., BWI, CEA, CEDRAT, CERTH, CESI, CETIM, CHALMERS, CNRS, CRF-FIAT, D'APPOLONIA, DELCAM, DELFT UNIV., DTI/DTU, EPFL LAUSANNE, ETH ZURICH, EUROCHILE, FIDIA, FLANDERSMAKE, GTS, HELLAS, IBS, IFW / LZH HANNOVER, INESCPORTO, INRIA, IPA FHG STUTT GART, IPT / WZL / ILT / FHG / AACHEN, ITIA, IWU / TU CHEMNITZ, KALE AERO, KTH, STOCKHOLM, KU LEUVEN, LINZ, MONTERREY, NPL, NTNU / SINTEF, POLIMI, PONTIFICIA PERU, PRAGA UNIV., PRIMA, PROFACOR, PTW DARMSTADT, SIRRI, SOCIESC, SWEREA, SZTAKI BUDAPEST, TEKNIFORETAGEN, TIMKEN, TNO, TU, ORTMUND, TU DRESDEN, TU EINDHOVEN, TUT TAMPERE, TWI, TYROLIT RTD, UNIV. ANKARA, UNIV. BRITISH COLUMBIA, UNIV. CALIFORNIA, UNIV. COSTA RICA, UNIV. ESTAMBUL, UNIV. GRAZ, UNIV. KEIO, UNIV. KOBE, UNIV. KOC, UNIV. LISBOA, UNIV. MASSACHUSSETS, UNIV. MICHIGAN, UNIV. NAGOYA, UNIV. PATRAS, UNIV. SABANCI, UNIV. SAO PAULO, UNIV. SETUBAL, UNIV. SOFIA, UNIV. TESALONICA, UNIV. WATERLOO, UNIV. CRANFIELD, UNIV. NOTTINGHAM, UNIV. OULU, UNIV. PADOVA, UNIV. SHEFFIELD + AMRC, UOB / BIBA / LFM BREMEN, VTT, WARSAW UNIV.

06. BRTA in figures

9 2021 IN FIGURES

IDEKO is a member of the **Basque Research & Technology Alliance, BRTA**; with 17 agents belonging to the Basque Network of Science, Technology and Innovation; in addition to SPRI and the Provincial Councils of Gipuzkoa, Bizkaia and Araba.



17

SCIENTIFIC-TECHNOLOGICAL MEMBERS

Azterlan, Azti, Ceit, CICbioGune, CICbiomaGune, CICenergiGune, CICnanoGune, Cidetec, Gaiker, Ideko, Ikerlan, Leartiker, Lortek, Neiker, Tecnalia, Tekniker, Vicomtech.

320 M€

ANNUAL INCOME

60% Public Income - 40% Income from Companies.

3.780

RESEARCHERS

519

PHD THESIS

1.582

PUBLICATIONS

112

PATENTS

65 M€

INTERNATIONAL PROJECTS

FIELDS OF ACTIVITY



Communication
and Marketing



Talent



Knowledge
Transfer



Scientific and
Technological
Activity



Indicators
Following-Up



Support at R&D
Management



MEMBER OF BASQUE RESEARCH
& TECHNOLOGY ALLIANCE

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