ANNUAL REPORT

2023

ideko.es

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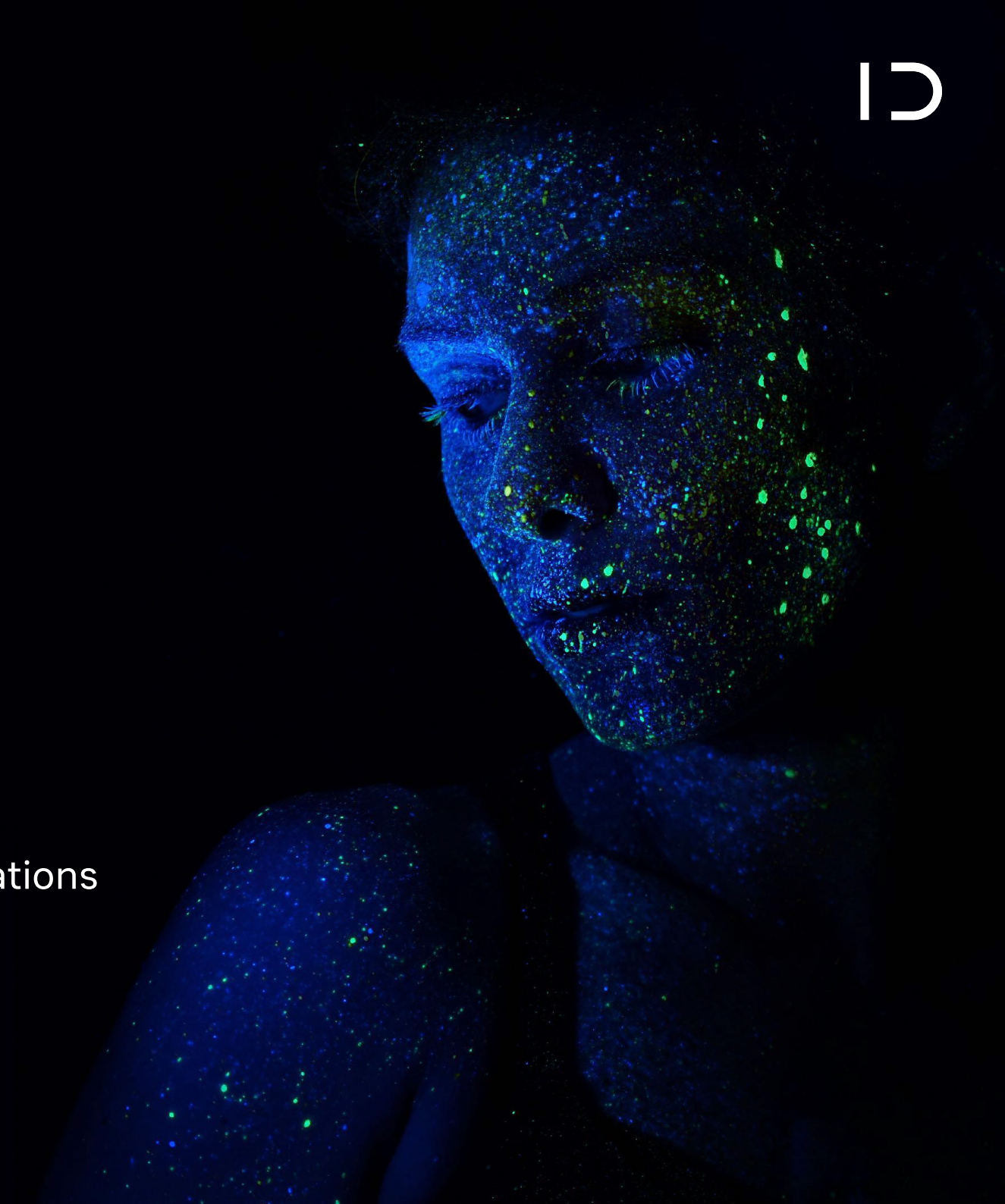


XABIER ALZAGA
President of IDEKO

As we near the completion of our 2021-2024 Research Plan, we can confidently affirm that 2023 has been another year of growth and consolidation for IDEKO. A 7% increase in turnover, a 20% increase in the number of cooperative members, and the completion of high-value R&D projects for the industrial sector are some of the figures and milestones that support this.

We have not only maintained our records, but we have surpassed them, reaching a total of 11.1 million euros.

Of the income, 53% (5.9 M€) came from the private sector, through the transfer of R&D projects to improve and optimise the productivity and competitiveness of the industrial fabric and sectors such as aeronautics, energy or machine tools. The remaining 47% (5.2 M€) came from technological research and innovation efforts, with the aim of transferring scientific and technological results to companies. This work was distributed among initiatives supported by programs from the Basque Government (23%), European institutions (20%), and the Spanish Government (4%).

IDEKO's leadership in its areas of specialization, such as precision and artificial intelligence applied to manufacturing, is evident through its leadership and contributions in R&D projects. These projects play an essential role in the development and optimization of technologies for the industry.

In terms of staff, the number of IDEKO members grew by 20% in 2023, with 22 new members compared to 2022, bringing the total to 133 people. Additionally, there is a team of 11 employees working in the center's joint ventures. Furthermore, significant initiatives contributing to work flexibility and the well-being of IDEKO employees continue, such as the opening of offices in Zamudio and Zuatzu and the establishment of remote work.

During 2023, we also made significant strides in scientific excellence with 30 indexed publications, marking a 16% increase compared to 2022. Meanwhile, the number of active patents remains at 39.

These excellent results have been made possible thanks to the trust placed by all collaborating companies, but above all, due to the effort, commitment, resilience and dedication of everyone at IDEKO. I would like to especially thank and recognize the dedication of one person in particular, Nerea Aranguren, who in 2024 will embark on her new role as CEO of Danobatgroup and MIA.

NEREA ARANGUREN
Managing Director of IDEKO

I have been part of IDEKO for more than 25 years and I have got to know this centre and the unique group of people that make it up very well. In the last stage, as manager, I have seen how the talent of this team has helped to position us at the forefront of advanced manufacturing.

Artificial Intelligence applied to manufacturing, precision machines and processes, simulation and digital twins, active and intelligent components, processes for strategic parts and sectors and robotics have been our main research areas in 2023 and are opening up new markets for us.

With the aim of continuing to promote R&D in advanced manufacturing, we continue to invest in new infrastructures and equipment, such as a laboratory for the development of R&D projects in the field of precision, specifically focusing on artificial vision technologies and non-destructive inspection.

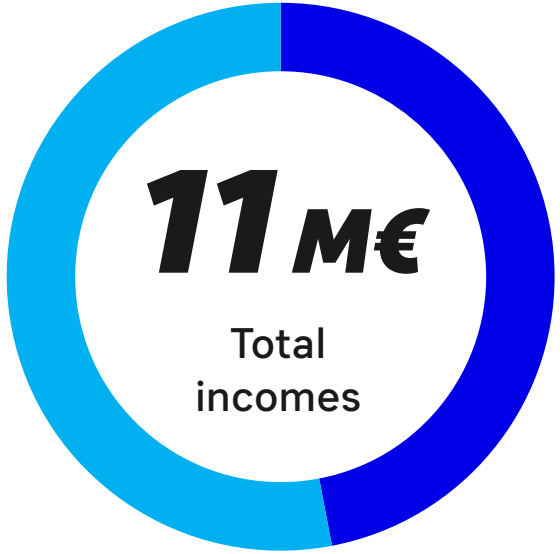
In 2023, IDEKO reaffirmed its commitment to sustainability, integrating it into all areas of its Research Plan and implementing concrete actions to improve its environmental impact. A detailed carbon footprint analysis was carried out, allowing for the identification and application of ecological improvements. In addition, R&D projects were led that, with the support of digital technologies such as digital twins, have enhanced environmental efficiency in manufacturing and machine tool precision.

Furthermore, we contributed to positioning the Basque Country internationally by hosting Europe's most important metrology congress, 3DMC. Throughout the year, our research staff actively engaged in knowledge dissemination at prominent specialized forums such as JEC World, CIRP and Euspen, focusing on IDEKO's key research areas.

I am convinced that our path will continue on this upward trajectory in the next phase, based on three interconnected pillars: scientific and technological excellence as a generator of new technology and innovative solutions, the transfer of these solutions to the industrial sector to help boost its competitiveness and the attraction and development of talent as fundamental capital to achieve our goals.

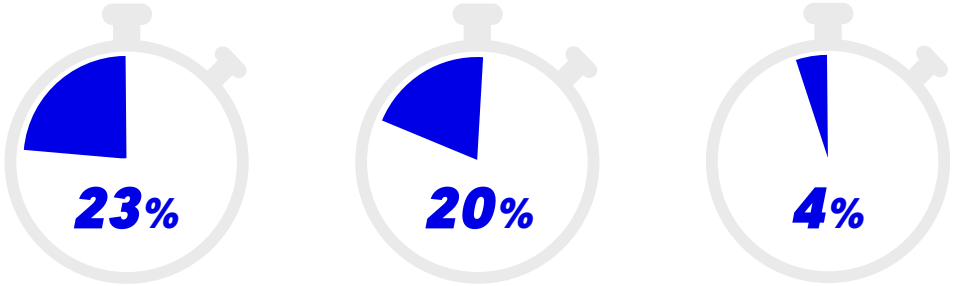
I would like to end, by firstly thanking each and every one of the people who form and have formed part of the centre and who have played an essential role in this journey. And, secondly, I wish the best of luck to Rafa Lizarralde, someone who also knows the centre very well and whose career is well known and recognised by our research staff. IDEKO is in the best hands to face the challenges that lie ahead.

Source of incomes



%53
R&D Under Contract

47%
Own R&D



Basque Government | Europe | Madrid

132 Total staff
27% Women | 73% Men

121 Staff

11 People in training

44% PhDs
11 PhD theses in progress

39 Patents
4 in 2023

>150
Technology Transfer Projects

>30
Years coordinating European Projects

1 ABOUT US

We are a research center specialized in advanced manufacturing, with special focus on precision machines and processes and artificial intelligence in manufacturing. We generate, capture and develop new technologies capable of responding to the current and future challenges of the industry.
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

GENERAL DIRECTION

Scientific Dept.
- Scientific Creation and Exploitation.

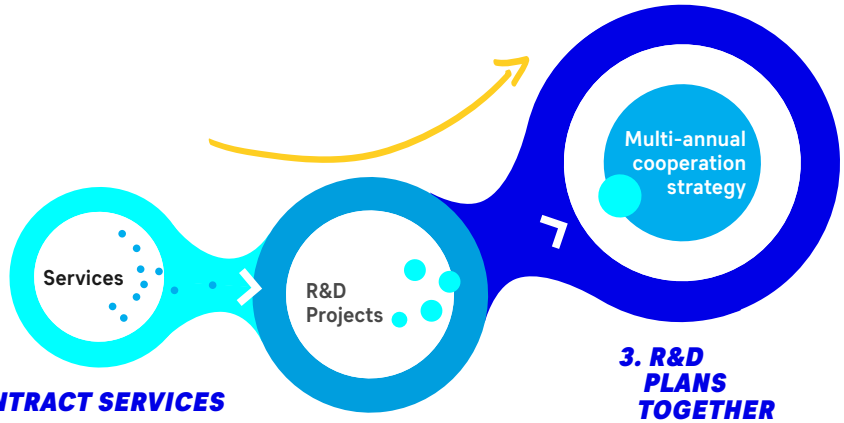
Development and Transfer Dept.
- Dynamics and Control.
- Design and Precision Engineering.
- ICT and Automation.
- Manufacturing Processes.
- Commercial.

Administration and Organizational Development Dept.
- Eco-financial.
- Administration programs.
- Integrated Management System.

Human Resources Dept.
- Management of our main assets, the people.
- Talent recruiting and generation of talent.
- Professional development.
- Training plans.

3 COLLABORATION OF IDEKO WITH COMPANIES

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



1. CONTRACT SERVICES
Resolution of vibration problems, modal analysis, FEM calculations and simulations, or the provision of advanced measuring, inspection and verification services.

2. R&D PROJECTS
Knowledge and technology transfer.

3. R&D PLANS TOGETHER

4
4 RESEARCH GROUPS

ICT AND AUTOMATION

01

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

DYNAMICS AND CONTROL

02

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

DESIGN AND PRECISION ENGINEERING

03

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

MANUFACTURING PROCESSES

04

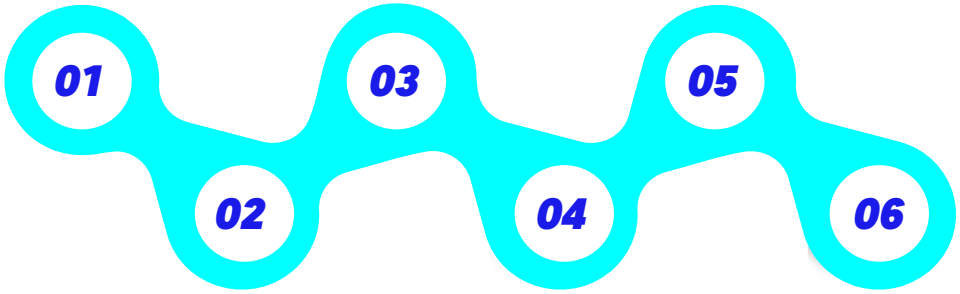
- Development of cutting and abrasion machining technologies.
- Sustainable manufacturing.
- Industrial management and production.
- Composite technologies.
- Laser technologies: Cutting processes and additive manufacturing.
- NDT Inspecton of superficial and internal defectology.

5
6 SPECIALIZATION LINES

MACHINE AND PRECISION PROCESSES

ACTIVE AND SMART COMPONENTS

STRATEGIC PARTS PROCESSES AND APPLICATIONS



ARTIFICIAL INTELLIGENT IN MANUFACTURING

SIMULATION DIGITAL TWINS

ROBOTICS

04. Projects

6 R&D PROJECTS

New technological solutions in precision engineering and advanced metrology for production systems with sustainable processes and zero defects.

Dynamic optimisation and monitoring of the wavegarden wave machine.

Design of an ultrasonic system for comprehensive inspection of fatigue defects in large metal parts.

Technologies for overcoming manufacturing requirements in high performance bearings.

Development of a grinding process using superabrasive grinding wheels in the automotive industry.

Action plan for compliance with requirements for electric motor parts.

AI-intensive digital twin creation platform.

Digital twin for the detection of burns in grinding.

Dynamic optimisation of hydraulic pumps by monitoring vibrations.

Intelligent systems for sustainable manufacturing of the new generation of offshore wind turbines.

Intelligent NDT system in grinding processes.

Universal components for modular robotics for space, industrial and medical applications.

Circular and efficient composite manufacturing technologies based on photopolymerisation.

Grinding technologies to promote the implementation of advanced and sustainable coatings.

Open hyperscale edge computing platform for industrial data spaces.

Advanced magnetoactive materials for new smart systems.

Adaptive metrology system for precision robotics.

Modelling of grinding wheels for grinding in additive manufacturing.

EUROPEAN PROJECTS

SERRANO

Applications for more secure, faster and cognitive cloud computing.

TACCO

Fast, reliable and accurate set-up of large raw parts using an attractive, flexible and easy-to-use modular approach based on photogrammetry.

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.

FLEX4RES

Data spaces for flexible production lines & supply chains.

TEAMING-AI

Human-AI platforms for Artificial Intelligence evolution in manufacturing.

FIBREMACH

Robotic system for machining composites by internal chip suction (clean, precise and flawless).

DYNAMITE

Large dimension metrology by photogrammetry for manufacturing technologies and process control.

EXTREMEXP

Experimentation driven and user experience oriented analytics for extremely precise outcomes and decisions.

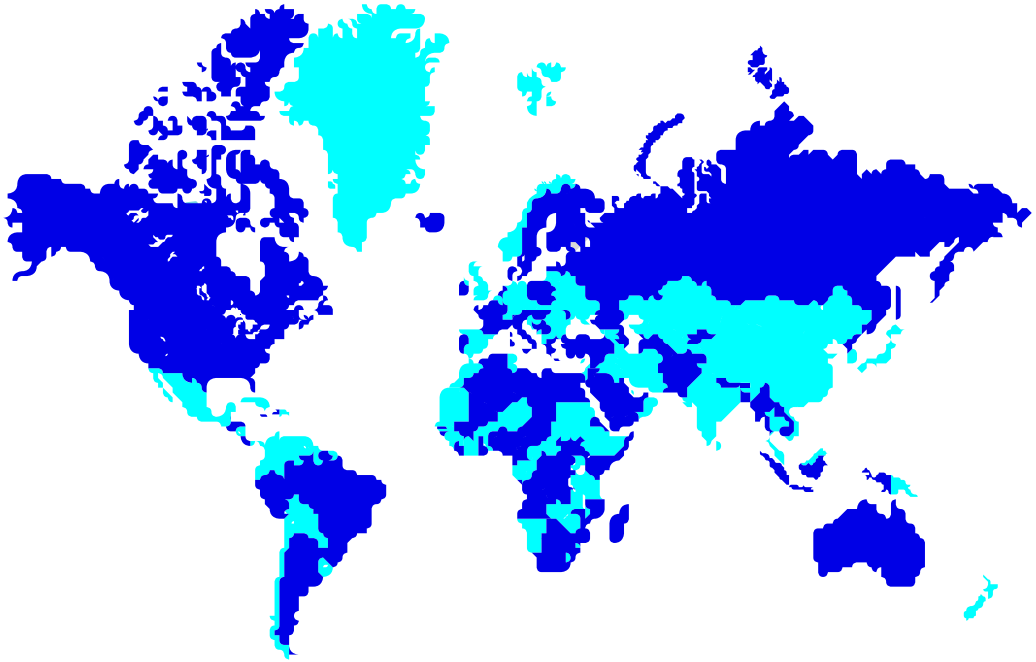
INFINITE

Aerospace composites digitally sensorised with microwires, from design and manufacturing to end-of-life (recycling).

COGNIMAN

Cognitive technologies in robotic finishing systems for large parts.

8
ALLIANCES AND COLLABORATIONS



CIRP
EUSPEN
ASPE

FoF
EFFRA
EuRobotics
BDVA

ETP
PPP
JTI

REGIONAL
NATIONAL
CLUSTERS

MEMBERS OF THE MOST IMPORTANT SCIENTIFIC AND TECHNOLOGICAL MANUFACTURING FORUMS

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 STUTTGART, 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, PROFACTOR, PTW DARMSTADT, SIRRIS, 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. NOTTHINGHAM, UNIV. OULU, UNIV. PADOVA, UNIV. SHEFFIELD + AMRC, UOB / BIBA / LFM BREMEN, VTT, WARSOW UNIV.

IDEKO

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& TECHNOLOGY ALLIANCE

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CFAA. Technological Park
of Zamudio (Bizkaia)

Zuatzu Business Park.
Donostia - San Sebastián (Gipuzkoa)