09
2019 IN FIGURES

BRTA
BASQUE RESEARCH & TECHNOLOGY ALLIANCE

IDEKO is a member of the **Basque Research & Technology Alliance, BRTA;** with 16 agents belonging to the Basque Network of Science, Technology and Innovation; in addition to SPRI and the Provincial Councils of Gipuzkoa, Bizkaia and Araba.

16	**SCIENTIFIC-TECHNOLOGICAL MEMBERS** Azterlan, Azti, Ceit, CICbioGune, CICbiomaGune, CICenergiGune, CICnanoGune, Cidetec, Gaiker, Ideko, Ikerlan, Lortek, Neiker, Tecnalia, Tekniker, Vicomtech.
301 M€	**ANNUAL INCOME** 60% Public Income - 10% Income from Companies.
3.500	**RESEARCHERS**
280	**PHD THESIS**
1.300	**PUBLICATIONS**
100	**PATENTS**
668	**INTERNATIONAL PROJECTS**

FIELDS OF ACTIVITY

- Communication and Marketing
- Talent
- Knowledge Transfer
- Scientific and Technological Activity
- Indicators Following-Up
- Indicators Following-Up

IDEKO
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IDEKO

MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE

'19 ANNUAL REPORT

XABIER ALZAGA
President of IDEKO

At this time of looking back on past achievements and future challenges, it is inevitable to focus on the health crisis caused by COVID-19, a scenario that overwhelmingly conditions all the actions we undertake.

The changing and uncertain environment in which the industry that I represent is submerged, and to which IDEKO owes its very existence, is putting tremendous pressure on our teams and organisations. But if there is one lesson that we learned from the past that is certainly applicable at this juncture, it is that the unequivocal commitment to technological differentiation is and will continue to be one of the most valuable weapons for moving forward.

The strategic importance of manufacturing and the supply chain is more evident than ever, and particularly now we need to put value on technology and knowledge by applying it to the most immediate needs, while also considering the future sustainability of our sector.

Remote service, remote diagnosis, connectivity or virtualization of processes have taken on an importance that they did not have until now and we have not only the opportunity, but also the obligation, to work with the industry in providing our developments and commitment to innovation in this new scenario.

In addition to the current health emergency, this year will also be marked by the constitution of the BRTA, Basque Research & Technology Alliance and the strategic thinking of our new research plan to guide us in the coming years will be drawn up. As constituent members of BRTA, IDEKO is facing this new stage of collaboration between agents and public bodies with great optimism, aware of the significance of the project and the responsibility involved.

It is therefore a year of closing one cycle and opening a new highly uncertain scenario, but one for which we feel fully ready. And this will be done, as always, with the support from the most important stakeholders in our field: the partner companies, public institutions, our BRTA partners and the people on our team. To all of them, I would like to thank them and convey our firm commitment to facing the challenges of the future together.

NEREA ARANGUREN
Managing Director of IDEKO

As usual at this time of year, I am pleased to share the most significant data on the activity carried out by IDEKO in 2019.

Our revenue last year exceeded 10 million euros, a figure that shows our business interests were consolidated, both in the field of research and in projects with the private sector, an area which accounts for almost half of our turnover. 55% of our income comes from R&D&i programmes under the auspices of European, Spanish and Basque institutions. The remaining 45% is the result of the 165 technology transfer projects to the private sector.

Moreover, all above activity was achieved without neglecting scientific production. We held 32 active patents, 5 of which were granted in that year. In addition, we actively increased our dissemination work with 34 indexed publications. We participated in organizing International Congresses (EUSPEN and AEND). Our presence at the Machine Tool Congress, where we presented 10 technical papers, was rewarded with the prize for the best scientific paper at the event.

Staff at IDEKO now includes 110 people, 29% of whom are doctors. Eight more professionals who are currently working on their doctoral thesis at the centre will up this number in the near future.

However, if there is one significant milestone that marked last year, it was the end of our participation in the IK4 technology alliance and the beginning of a new stage as members of BRTA, The Basque Research & Technology Alliance. From here I would like to thank all the entities, public institutions and people who, for more than a decade of joint collaboration, have cooperated with us within the framework of IK4. We are now starting a new and exciting stage, marked by optimism and enthusiasm, and reflected in our new brand image.

In short, 2019 has taken us to the end of a strategic cycle and to a 2020 full of uncertainty, but leaves us in a leading position in our specialization: the development of advanced manufacturing technologies, within a consolidated model of a centre that will maintain its commitment to excellence.

01 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.

02 ORGANISATION

GENERAL DIRECTION

Research and Development Dept.

Design and Precision Engineering.
Manufacturing Processes.
Dynamics and Control.
ICT and Automation.

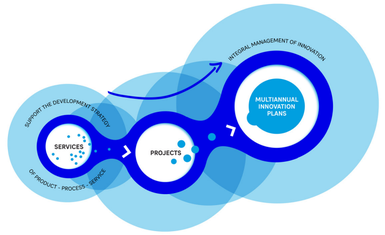
Technology Innovation and Exploitation Dept.

Analysis of the current needs of our customers.
Opportunities identification.
Value and competitive transformation in the results of our research activity.
Strategic Innovation.

Organization and Development Dept.

Management of our main assets, the people.
Talent recruiting and generation of talent.
Professional development.
Training plans.
Administrative support.

03 COLLABORATION OF IDEKO WITH COMPANIES



1. SERVICE PROVISION

We have punctual, fast and efficient services to optimise the manufacturing and production processes of your industry, such as the solution to chatter problems, modal analysis, calculation and simulation of machine structures and mechanisms, characterisation and compensation of thermal expansion, advanced measurement, inspection and verification services. We offer quick and flexible services that respond to the timely needs of our customers.

2. SUPPORT TO THE PRODUCT / PROCESS / SERVICE DEVELOPMENT STRATEGY

We analyse dynamic and thermal behaviour, model and manage production plants or improve manufacturing and production processes among other services. We know how to adapt ourselves and respond to our customer's requirements. We provide companies with differentiating technology solutions to enhance their competitiveness.

3. COLLABORATION FOR INNOVATION MANAGEMENT

This relationship model enables us to design R&D&I plans together through which we can align Research, Development and Innovation activities as far as is possible with the current and future needs of our customers. This is the top collaboration level that goes beyond a single project and is based on establishing .collaboration plans together with a multi-annual horizon.

04 SPECIALIZATION

01 ICT AND AUTOMATION

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

02 DYNAMICS AND CONTROL

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

03 DESIGN AND PRECISION ENGINEERING

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

04 MANUFACTURING PROCESSES

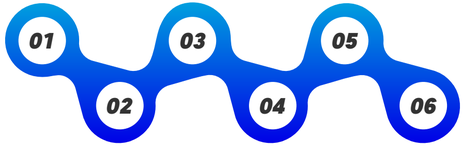
- Development of cutting and abrasion machining technologies.
- Sustainable manufacturing.
- Industrial management and production.
- Composite technologies.
- Laser technologies: Cutting processes and additive manufacturing.
- NDT Inspecton of superficial and internal defectology.

05 TECHNOLOGICAL SOLUTIONS AND SERVICES

VERIFICATION and machine fault **DIAGNOSIS**

Dimensional measurement **ULTRA-PRECISION**

MEASUREMENT by VISION Photogrammetry



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

06 R&D PROJECTS

Active control of regenerative vibrations on machine tools by industrial platforms.

Development of technologies in flexible and collaborative robotics for the automation of manufacturing processes in the Basque industry.

Inspection system of burns during grinding.

Advanced manufacturing in grinding for strategic sectors and high value-added parts.

Intelligent approach to predictive maintenance based on physical cyber systems.

Intelligent inspection for advanced zero-defect manufacturing.

Head and tools with internal suction for safe robotic machining of composite parts.

Development of automated manufacturing processes and high integration of aeronautical airframe structures in an industry 4.0 environment.

Development of a complete five-axis milling solution for applications with stringent precision requirements.

"Digital twins" modelling and virtualisation of machine tools and manufacturing cells for virtual commissioning.

New monitored preforming technology for composite stiffeners.

New grinding machine for the automated manufacture of curved couplings for the aeronautical sector.

Ultrasonic assisted turning device for the aeronautics sector.

Technologies for the elimination of defects in grinding slender parts.

New automated cutting and panelling line for the forming of sheet metal components.

Cryogenic machining.

EUROPEAN PROJECTS

COGNIPLANT	LEVEL-UP	QU4LITY	FORZDM	PRECOM
Development of digital technologies for equipment diagnosis and process monitoring in the continuous production industry.	Reconditioning and digitization of production lines to extend their life and adapt to current trends in connected and digital equipment.	Digital reality in Zero Defect manufacturing.	Integrated Zero Defect Manufacturing (ZDM) solution for high value-added multi-stage manufacturing systems.	Predictive cognitive maintenance decision support system.

PRODUCTIVE 4.0	PROGRAMS	DITAS	COROMA	ZAERO
Electronics and ICTs as digital industry enablers and optimised supply chain management covering the entire product life cycle.	Innovative design and predictive maintenance technologies to extend the life span of production systems.	Enhancement of data-intensive applications using cloud/fog environments for data and computing processes.	Cognitively improved robots for the flexible manufacture of metal and composite material parts.	Defect-free manufacture of composite parts in the aircraft industry.

07 2019 FIGURES

IDEKO
MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE

TOTAL INCOMES

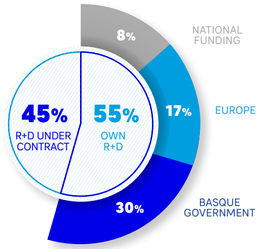
10,6 M€

120 PEOPLE

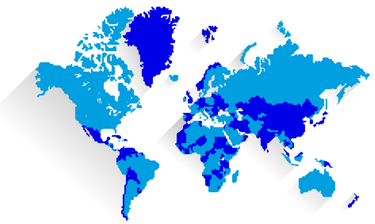
27% PHD

32 PATENTS

INCOME DISTRIBUTION IN 2019



08 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.