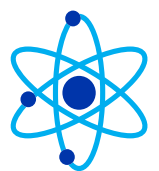


6	TECHNOLOGY CENTERS
9	VENUES
27,5%	308 PHD
55	COMPANIES AND GOVERNMENT ENTITIES
1.119	PROFESSIONALS
30	PATENTS

STRATEGIC AREAS



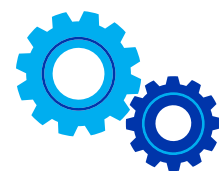
ENERGY



HEALTH



TRANSPORT



ADVANCED MANUFACTURING



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ALIANZA IK4

AZTERLAN
CEIT

GAIKER
IDEKO
IKERLAN

LORTEK
TEKNIKER



Xabier Alzaga
President of IK4-IDEKO

I am delighted to announce the 2018 annual results for the first time as the new president of IK4-IDEKO Research Centre.

From the very beginning, IK4-IDEKO has remained close to the local manufacturing industry, and as such it has been a key pillar in the competitiveness of industry by generating knowledge, transferring technology and training of qualified professionals so much in demand in today's companies.

This result-gearred focus together with the specialisation in manufacturing technologies has brought IK4-IDEKO to where it is today, with numerous technological and organisational challenges in the coming years. 2018 has been a key year in the acquisition of equipment and the improvement of our facilities, as well as in the establishment of strategic alliances with leading international agents in our areas of specialisation.

Looking to the future, the growing digitalisation of the industry means for IK4-IDEKO, and for the rest of the agents in the value chain, a new domain with many business opportunities. This future must be tackled together, in tight collaboration with the other agents of the Basque Science and Technology Network in a new relationship model in which IK4-IDEKO will be a fundamental asset.

Before signing off, I would like to give my sincere thanks to all those companies that have trusted in IK4-IDEKO, to national agencies, to the other agents of the Basque Science and Technology Network and, above all, to the people at IK4-IDEKO who, year after year, make our project an exhilarating reality.



Nerea Aranguren
Managing Director of IK4-IDEKO

I am very pleased to invite you to look back for a moment to the milestones of IK4-IDEKO at the close of the financial year.

In 2018, we reached the figure of 10.2 million euros in revenue, up 7.3% from an income of 9.5 million the previous year, and the consolidation of our activity in the private sector, from which almost half of our turnover comes.

Of the income obtained last year, 55% comes from R&D&I projects in the framework of a variety of European, national and Basque programmes. We would like to express our sincere gratitude to these entities and assure them that we are fully committed to work with the greatest responsibility, seeking to convert these resources made available into innovation through our R&D. The remaining 45% came from technology transfer projects to the private sector, a fact that shows our closeness to the reality of companies.

To be precise, we worked on 92 specialisation projects and participated in 163 transfer projects. And all this without neglecting scientific production, reaching the figure of 27 active patents in 2018 and requesting the granting of another 4 new patents at the end of the year. In addition, we published more than ever, with 21 indexed publications and the presentation of various articles at international congresses as well as numerous technical dissemination articles.

With the creation of 13 new jobs, the IK4-IDEKO staff has grown to 121 people, 26% of whom are doctors. This last figure is on the rise with 7 professionals currently working on their doctoral thesis.

Apart from these excellent figures that show the success of IK4-IDEKO, I would like to highlight the effort made in 2018 to adapt our facilities and the acquisition of equipment with the launch of the Digital Grinding Innovation Hub, a collaborative space for the development of Digitalization in Grinding technologies.

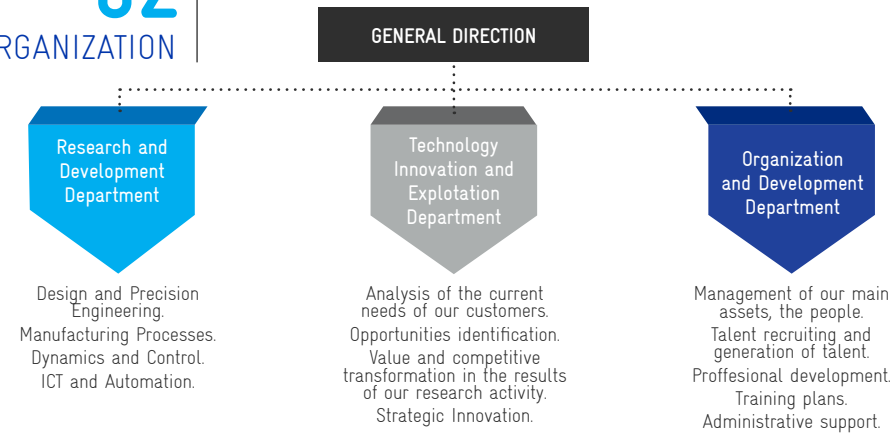
In short, the results obtained reflect our continued commitment to excellence in manufacturing technologies and the transfer of high value-added technologies to companies, and our effort to being the ally that the industrial fabric needs to remain at the forefront of innovation and boost its competitiveness.

2018 ANNUAL REPORT

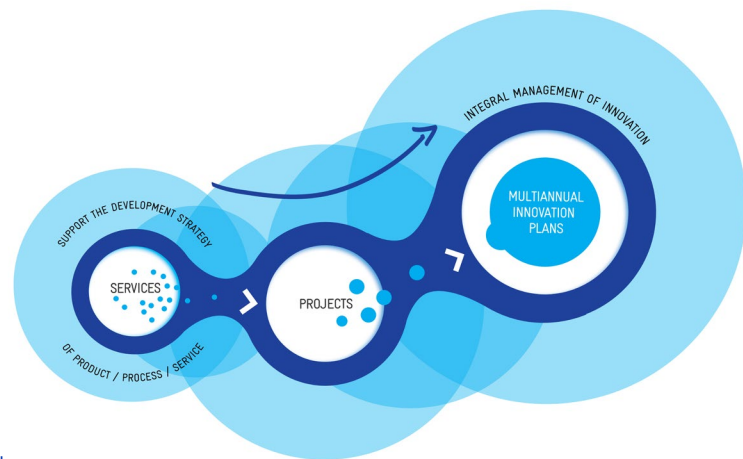
01 ABOUT US

We are a research centre that specialises in industrial production and manufacturing technologies, and we are integrated into the IK4 research 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 ORGANIZATION



03 COLLABORATION OF IK4-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.

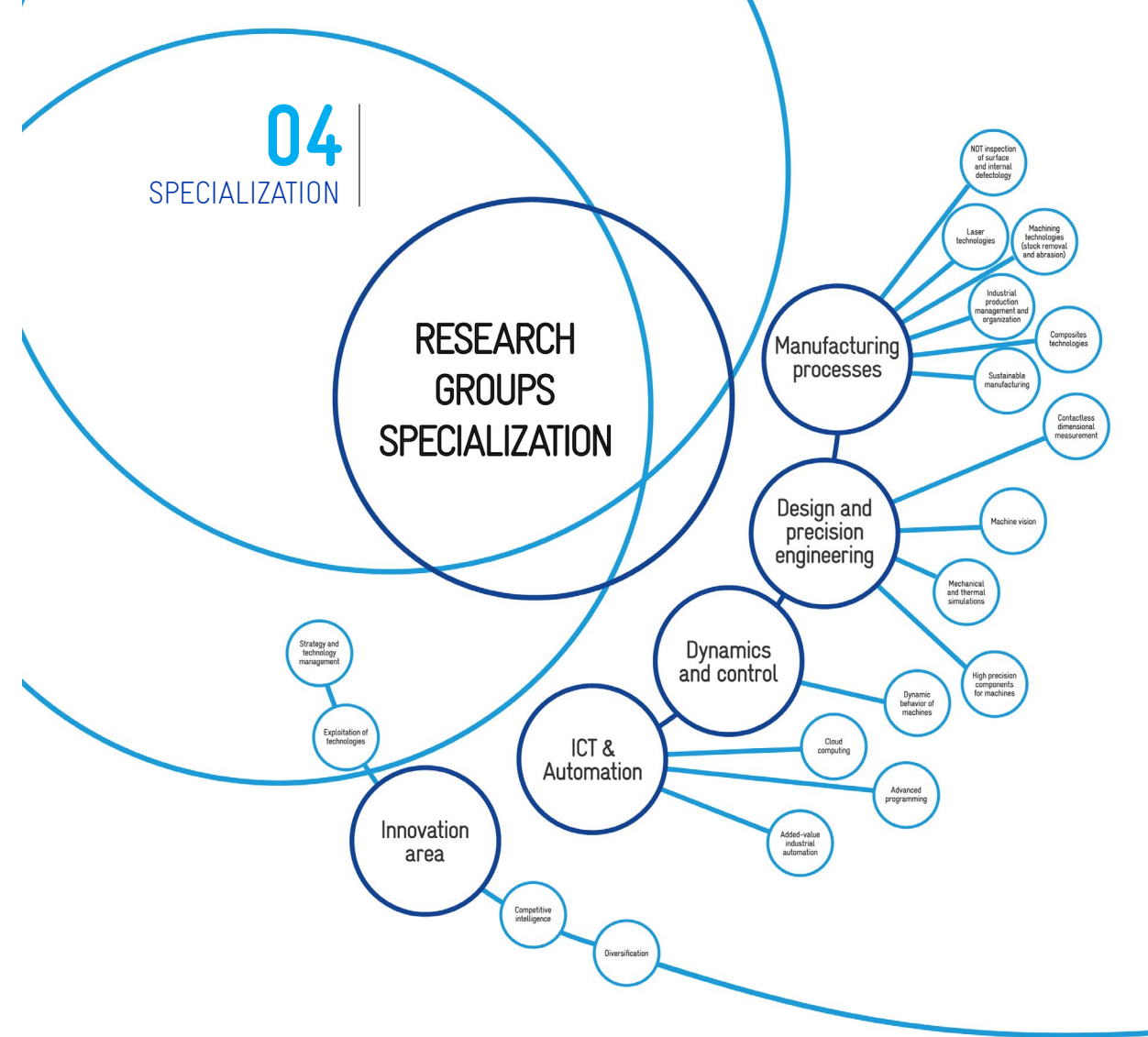
2. SUPPORT TO THE PRODUCT / PROCESS / SERVICE DEVELOPMENT STRATEGY

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



05 TECHNOLOGICAL SOLUTIONS AND SERVICES

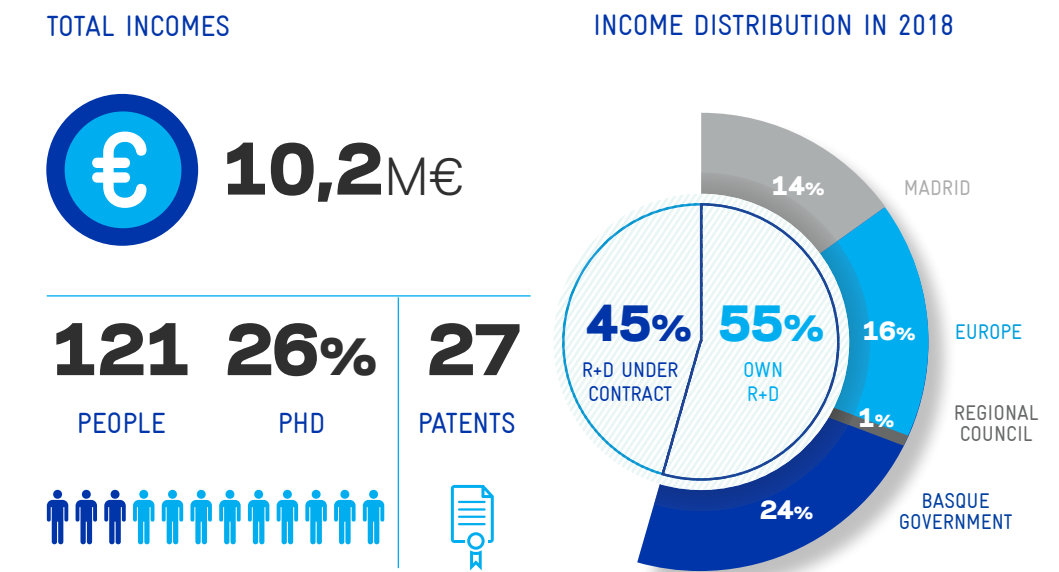
- 01 NDT TESTING EDDY CURRENTS
- 02 VERIFICATION AND MACHINE FAULT DIAGNOSIS
- 03 ULTRASONIC NDT TESTING
- 04 MEASUREMENT OF RESIDUAL STRESSES
- 05 PHOTOGRAMMETRY
- 06 MEASUREMENT BY VISION
- 07 ULTRA-PRECISION DIMENSIONAL MEASUREMENT
- 08 CONTACTLESS NDT TESTING-THERMOGRAPHY
- 09 DEVELOPMENT AND INTEGRATION OF TESTING AND MEASURING SYSTEMS ON MACHINES AND PRODUCTION LINES

06 R&D PROJECTS

Active control of regenerative vibrations in machine-tools using industrial platforms.
 Development of technologies in flexible and collaborative robotics for the automation of manufacturing processes in Basque industry.
 Development of various methods for residual stress relief in metal sheets.
 Advanced manufacturing in grinding for strategic sectors and high added value parts.
 Development of virtual models for the improvement of the lifespan of components and capital goods.
 Smart inspection for advanced zero defect manufacturing.
 Development of automated manufacturing processes and high integration of aeronautical fuselage structures in an industry 4.0 environment.
 Smart approach for predictive maintenance based on cyber-physical systems.

Smart solutions for the continuous control of precision in high-performance milling machines.
 New grinder family for extra-hard workpieces. Super abrasive wheel diamond dressing systems.
 New monitored preforming technology for composite stiffeners.
 New grinder for the automated manufacture of curvic couplings for the aeronautics sector.
 Ultrasound aided turning device for the aeronautics sector.
 Technologies for the elimination of defects originating in the grinding of thin workpieces.
 Safe and productive manufacturing processes for the manufacture of high value-added parts by means of smart grinding tools.
 Technologies for the elimination of defects originating in the grinding of thin workpieces.

07 2018 IN FIGURES



08 ALLIANCES AND COLLABORATIONS



EUROPEAN PROJECTS

PRODUCTIVE4.0	MM-TECH	SYMBIO-TIC
Electronics and ICTs as digital industry enablers and optimised supply chain management covering the entire product life cycle.	New methods and technologies for the manufacture of future alloy components.	Design of work environments that allow the interaction of robots and people.
COROMA	PRECOM	DITAS
Cognitively improved robots for the flexible manufacture of metal and composite material parts.	Predictive cognitive maintenance decision support system.	Enhancement of data-intensive applications using cloud/fog environments for data and computing processes.
ZAERO	FORZDM	PROGRAMS
Defect-free manufacture of composite parts in the aircraft industry.	Integrated Zero Defect Manufacturing (ZDM) solution for high value-added multi-stage manufacturing systems.	Innovative design and predictive maintenance technologies to extend the life span of production systems.

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, TOCKHOLM, 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. MASSACHUSETTS, 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.